

AUGUST 1951

Route this to:



CHEMICAL PROCESSING

The News Magazine of Processing Developments and Control

Highlights

of this issue's
292 articles

Describing developments in
processes, techniques, mate-
rials, equipment

Dynel Filter Cloths Last
4-16 Months on Hot Alkali
Chloride Brines and Caustic
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ly Zinc Chloride 76

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The Cover Picture

High purity of Pfizer's new
vitamin A depends on ex-
clusion of oxygen during
manufacture, to a large
extent. Nitrogen is freely
used for purging, blanketing.
See story on . . page 8

PUTMAN PUBLISHING CO., CHICAGO

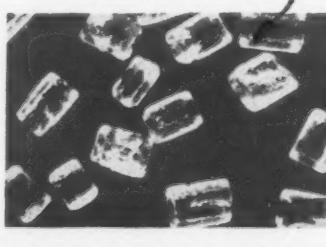
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"That's Interesting"

It must be a "hard row to hoe,"
when you're a concrete farmer

Two of the strangest farms in the world are being cultivated at Naperville, Ill. and at Perry, Ga. Crops planted nine years ago are still in bloom. They're not covered by parity. They consist of concrete slabs, boxes and posts which simulate retaining walls, abutments and bridges. Careful observations reveal what types of concrete are best suited to varying conditions of service.

In addition to the farms, experiments are carried on at other locations. Some embody road strips, while others consist of



"I've got cabbage, carrots, celery, clover . . . but I don't see concrete anywhere on this list."

pilings driven into salt water. Another project subjects a thousand concrete beams to sulfate-bearing soil. At an early stage it was necessary to use four tons of Epsom salts to obtain the desired sulfate content in one of the tanks. That is pretty strong medicine even for concrete. (Summarized from release of the Portland Cement Association, Chicago, Ill.)

Hypersorber towers 207 feet, weighs 500 tons

Believed to be the largest single drum ever erected in one piece is the 207 foot Hypersorber raised by the Austin Construction Company at Midland, Mich., for The Dow Chemical Company. It towers 40 feet above the company's tallest powerhouse stacks. Its diameter, including bustle, measures 12 feet.

Much assembly work involving piping, attached platform, insulation and internals had to be completed. There were ten miles of one-quarter inch instrument piping placed alongside the column. The finished tower weighs about 500 tons.

Because of its size, the Hypersorber was built in two sections to facilitate shipment. A major project was welding the parts of the column together before erection. To weld a small top section to the main stem, copper tubes were placed around the weld area, through which alternating currents were passed to heat the area to necessary stress relieving temperatures. The same coils were used for pre-heating during welding operations.

Rice blast removes carbon from motors

Blasts of rice are being used to remove carbon without tearing down motors. A device using a regular air compressor directs grains of rice into spark plug ports through a Koroseal hose and special nozzle. Rice flow can be seen through the hose which bends without kinking, withstands garage grease and rough handling.

The blasting device is named the "Head-On Carbon Blaster" and developed by Kent-Moore Organization, Detroit. Machine can be loaded with 10 lb of rice at a time. This is blasted into combustion chambers in quantities of $5\frac{1}{2}$ oz. Used rice goes to a filtering compartment where broken rice and carbon are removed.

"That's Interesting"

How corrosive can you get?

One of Monsanto Chemical Company's corrosion inhibitors is a formulation intended to hold down the corrosive qualities of shellac and other non-aqueous products. Yet, the inhibitor itself has such an extreme acid action that it must be shipped in double-lined, specially constructed drums. The answer is that, in action, this inhibitor is used in very low percentage, and reacts, against the steel of the container, to form an inert coating which is insoluble in alcohol, or like products—thus protecting the container for continued reuse. (Monsanto Magazine for June 1951 — The Monsanto Chemical Company, St. Louis, Mo.)

Synthetic newsprint — ?

A speeded-up program of research in production of synthetic newsprint has been urged by the National Newspaper Promotion Managers' Assn. A resolution asserted that woodpulp shortage is curtailing newspaper production and stated that efforts should be made to develop methods of making newsprint from sources other than wood.

Petrochemicals since 1920

Chemicals were first produced commercially from crude oil in the United States about 1920, some 60 years following the drilling of the first oil well in this country. In 1941, at the time of Pearl Harbor, the petrochemical industry had grown up. Its contributions were many: toluene for TNT used in making bombs, additives for lubricants, butadiene for synthetic rubber, and secret ingredients for incendiary bombs. (From Bulletin — April 1951 — Standard Oil Company of California.)

Cut cost of making money

Use of a recently developed quick-drying intaglio ink varnish is cutting the cost of printing paper currency. Annual savings will approximate \$1,000,000. Printing speed is increased. Baking the currency to set and dry the ink is now an overnight job instead of one requiring two weeks. Also, slip-sheeting is no longer necessary. The ink varnish is a product of Hilton-Davis Chemical Company Division of Sterling Drug, Inc., Cincinnati, Ohio.

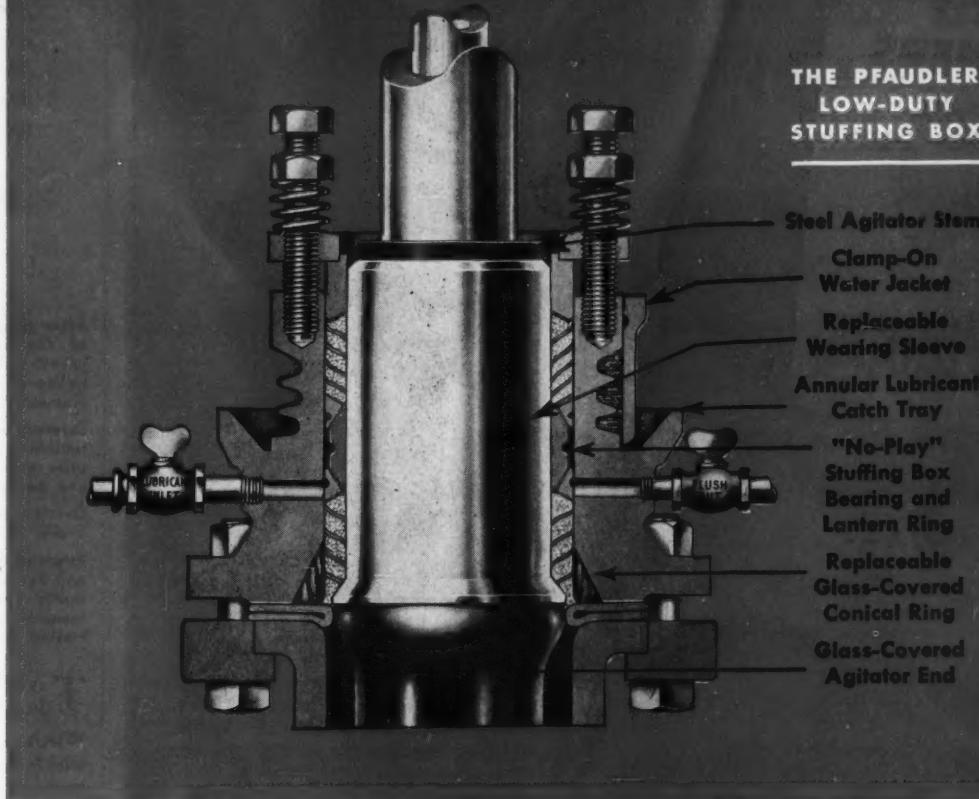
Brains for sale

A new electronic brain sells for \$8,000 and takes up no more room than a four-drawer filing cabinet. The brain's name is Ida (for Integro-Differential Analyzer). Ida solves such problems as qualitative and quantitative dynamic studies in chemistry, mechanical engineering, aero-dynamics, nucleonics, thermodynamics and servo-analysis. Solutions are recorded in graphic form on a two-channel oscillograph. (Computer Corp. of America, 149 Church St., New York 7, N. Y.)

(Continued on third cover)

For more information on product advertised at right, specify
CP 5831 . . . see information request blank between pages 2-3.

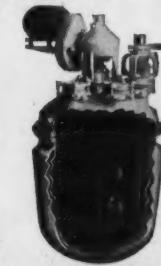
THE PFAUDLER HIGH-DUTY STUFFING BOX



THE PFAUDLER LOW-DUTY STUFFING BOX



To meet special low-pressure chemical conditions, a variety of packing materials, sealer rings and lubricants are available for Pfaudler low-duty stuffing box.



Mounted on this glass-lined reactor, the Pfaudler high-duty stuffing box is completely accessible for repacking and inspection.

WHY PFAUDLER STUFFING BOXES give longer service under severe conditions

Highly corrosive chemicals make extreme demands on the stuffing boxes of your reaction equipment . . . especially when operating under pressure. The packing and lubricant are particularly susceptible to chemical attack on severe service . . . and the length of service obtained with ordinary materials very short.

The Pfaudler high-duty stuffing box is specially built to withstand pressure and temperature extremes. Automatic lubrication keeps it flooded with lubricant. And particular attention has been given to the packing. In order to offer a material of full chemical resistance, Pfaudler has developed a special process for making an effective packing of pure Teflon. It employs no binder, but the ring itself is porous so that the lubricant can work through slowly and be present at the contact surface at all times.

The self-centering "no-play" bearing and combination lantern ring in the Pfaudler high-duty stuffing box keep the agitator shaft running true. This eliminates weaving which would destroy the flexibility of the packing.

Replaceable sleeves of Hastelloy or other resistant materials are affixed to the agitator shaft. These prolong the life of the agitator by protecting against corrosion at the point where the agitator enters the stuffing box. The steel agitator stem is accurately machined to give shrink fit and to correct warpage after the glass coating has been applied. Both the agitator end and the conical ring in the bottom of the stuffing box are glass coated. Whenever needed, a water jacket can be easily clamped on.

In addition, special lubricants and counter balance systems can be supplied. And rotary seals are available for reactions where complete elimination of lubricant leakage is required.

To meet a wide range of reaction requirements efficiently and economically, Pfaudler also offers a standard stuffing box. This is suitable for mild services where pressures do not exceed 10 psi. For full details, just send us the handy coupon below.

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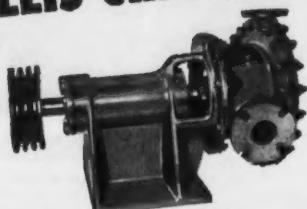
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Process Pumps

ALLIS-CHALMERS

Unretooched photo of pump shaft sleeve nearly worn through by action of abrasive in liquid entering stuffing box.

STOP THIS WEAR with New EQUISEAL Stuffing Box

KEEP ABRASIVES IN THE LIQUID BEING PUMPED entirely out of packing. Multiply packing life many times with new *Equiseal* stuffing box in Allis-Chalmers Process Pumps.

Here is how it works. An auxiliary rotor develops a low pressure area in front of the packing. For suction heads up to fifteen feet the pressure on the packing is zero. Consequently, the liquid being pumped will not enter the stuffing box while the pump is operating. Abrasives cannot ruin packing and shaft sleeve.

Maintenance is cut to a fraction of that usually required on abrasive pumping jobs.

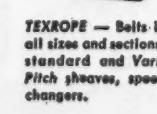
The *Equiseal* stuffing box is so effective that the packing may be removed while the pump is operating under positive suction head and the pump will not leak even though there is a direct passage from pump suction to atmosphere.

If you pump abrasives, you should know about the *Equiseal* stuffing box. Ask your Allis-Chalmers Sales Office for the details. Or write Allis-Chalmers, Milwaukee 1, Wisconsin for Bulletin 08B6615. A-3249

Equiseal, *Texrope* and *Vari-Pitch* are Allis-Chalmers trademarks.

ALLIS-CHALMERS

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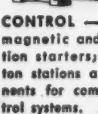
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CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.



TEXROPE — Belts in all sizes and sections, standard and *Vari-Pitch* sheaves, speed changers.

This is the first of a series of articles in this column dealing with those factors that are affecting the American way of life. Articles will be prepared by business, economic, and other public leaders who are authorities in their fields.

What Are You Working For?

By HENRY J. TAYLOR

News Analyst,
American Broadcasting Company

After graduating from University of Virginia in 1924, Mr. Taylor joined staff of Kansas City Star to report on economics and government.

Entered business for himself, establishing a corn products enterprise and later founding a pulp and paper concern.

Outstanding correspondent during World War II.

Extensively traveled in Europe and Far East since V-J Day. Recently completed a 35,000-mile round-the-world fact-finding trip, making intimate contact with people and broadcasting enroute.



AXES on the average man and woman who works in America consume about 40% of his or her income.

When folks pay from 40 to 90% of the money they earn, which we do, to pay for the support of the government, that is socialism . . . by any name.

When enterprises in the corporate name pay up to 70% of their earnings toward the support of the government, that's socialism.

Freedom means a system by which a man is free to work for himself and his loved ones. Socialism is a system which requires him to work for a government — a proper description. When he is taxed 40, 70, 90% by a government, that is socialism.

A turn must come in our affairs, for we will never beat Communism abroad by going Socialist here at home.

As I heard Mr. Gordon Gray say at the University of Virginia graduating exercises in Charlottesville, "We hear much about the Bill of Rights. We ought to have a Bill of Responsibility." To Mr. Gray's remark may I add that the first responsibility of a responsible government is that it not liquidate this country.

For patriotism means to stand by this country. Socialism means to liquidate this country.

This is the greatest nation on the face of the earth. All these confusions, the incredible extravagance at the public trough, the attacks on legitimate success and the confiscation of the people's properties and rights — these are unnatural things in America. They are neither our American history nor our American destiny.

They could not be done, and they never could have been done, had the folks of America known that was happening to them.

Now the times demand that we must know. We must know or we are lost, as France was lost, as England was lost, as the world will be lost if Stalin has his way. For Stalin expects us to knock ourselves out in our own gymnasium. Our task as good citizens is to see that this does not happen.

Accordingly, the threats we face from the inside here at

(Continued on page 71)

CHEMICAL PROCESSING

CHEMICAL PROCESSING

(CHEMICAL PROCESSING PREVIEW)

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Developments and Control

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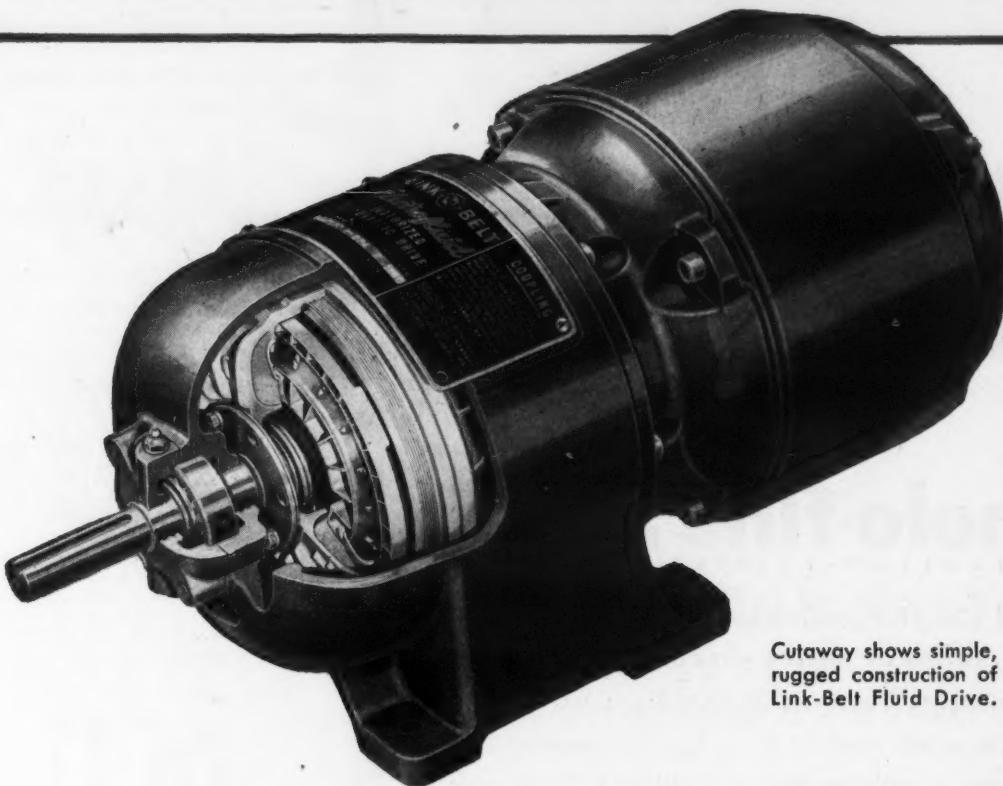
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Cutaway shows simple, rugged construction of Link-Belt Fluid Drive.

LINK-BELT Electrofluid Drive with constant



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The Link-Belt Electrofluid Drive comes to you in a "packaged" unit with NEMA mounting and shaft dimensions to facilitate ready installation. Book 2385 has complete information on five types of Link-Belt Fluid Drives — Electrofluid Drive, Electrofluid Gearmotor, Fluid Drive, Fluid Gear Drive and Fluid Coupling Drive.

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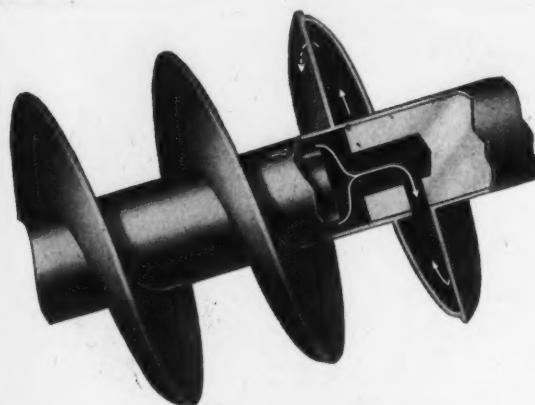
FLUID DRIVES

LINK-BELT COMPANY: Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in principal cities.

12,317

When inquiring check CP 5833 on handy form, pgs. 2-3

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New 8 page bulletin describing HOLO-FLITE features and applications will gladly be sent on request. Write, wire or phone for your free copy!

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*Reg. T.M.

why IT'S BETTER!

The HOLO-FLITE principle provides many important advantages in modern processing operations...



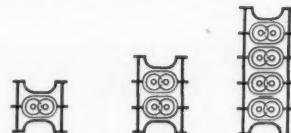
ITS LARGE HEAT-TRANSFER SURFACE requires far less space—as little as 1/5th the space required by other heat-exchange equipment. Further, flights can be "stacked" as high as desired to save floor space, simplify installation!



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IT IS ADAPTABLE to a wide range of applications—handles solids, pulps, pastes and slurries with equal ease. Heat transfer agent can be refrigerant, water or other fluids to provide a wide range of temperatures. Cooled products can be packed directly from HOLO-FLITE discharge, saving time, space and additional handling.



IT CAN BE DESIGNED to handle virtually any capacity by varying the diameter and length of the flights, and the number of "tiers."

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HIGHLIGHTS

(Continued from front cover)

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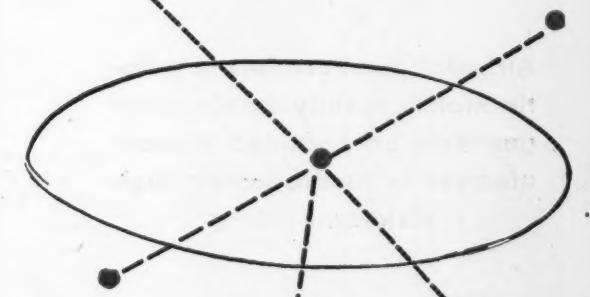
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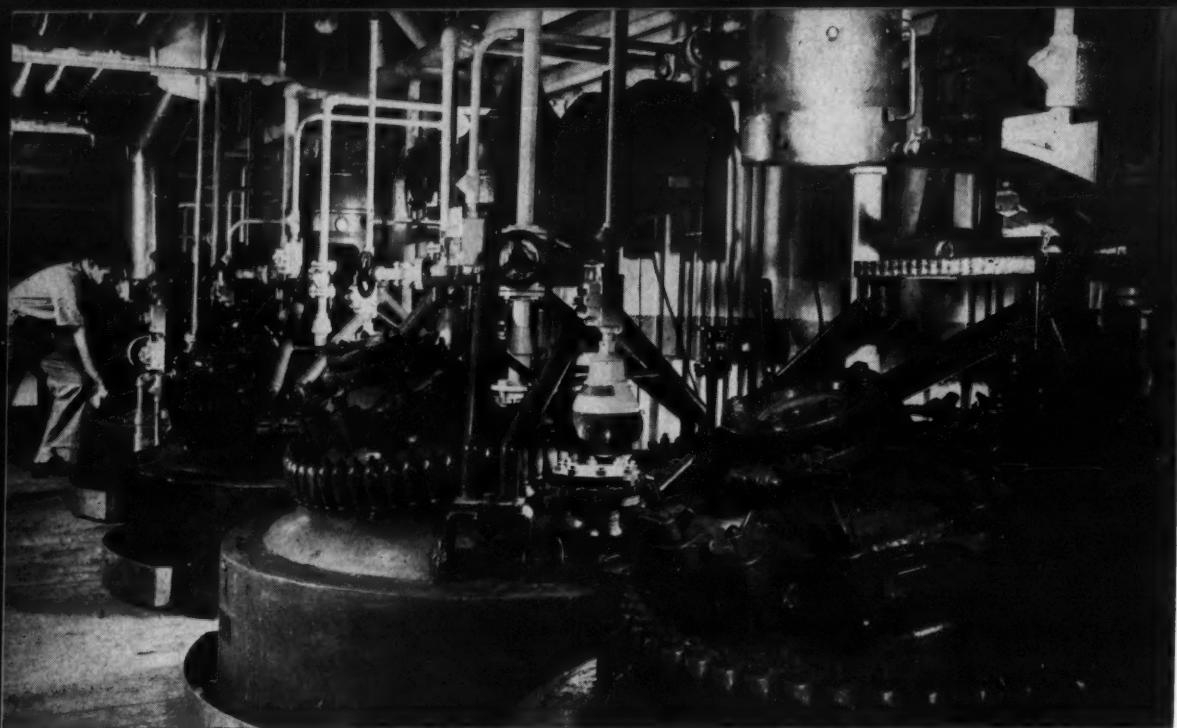
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In Canada: North American Cyanamid Limited, Toronto and Montreal

When inquiring check CP 5835 on handy form, pgs. 2-3

Nitrogen is used to exclude oxygen from reaction converting beta-ionone to a 14-carbon aldehyde in these glass lined pressure vessels

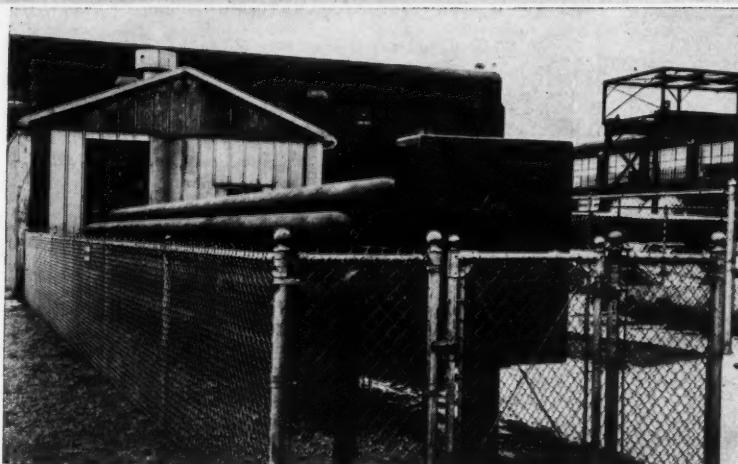


Pfizer's Vitamin A Plant Makes Extensive Use of Pure Nitrogen as an Inert Gas

Although final product in gelatin matrix is fully stable, oxygen must be excluded in manufacture to assure purity, high yield and safety

PROBLEM: In the production of synthetic crystalline vitamin A as the new Groton, Conn., plant of Chas. Pfizer & Co., Inc., it is imperative to keep oxygen away from many of the raw materials and intermediates, and the vitamin A itself. These materials are highly unsaturated compounds and can decompose or form peroxides. The last five steps of the process, after the structural skeleton has been formed, are especially sensitive to oxidation.

If decomposition and peroxide formation are allowed to take place, the natural result is a decrease in yield of the vitamin A. However, this is not the only consideration. Some of the peroxides which would form are very close in properties to the desired products in the various steps, and would be difficult to separate out in



Typical "Cascade" nitrogen storage unit for compressed gas. System at Pfizer has 124 cylinders arranged in two equal banks

purifying. The product is intended for consumption and must be of very high purity. Another consideration is that of safety. One of the steps involves a reaction with acetylene, and is hazardous if proper precautions are not observed. One precaution is to remove any traces of oxygen from the reaction zone.

Solution: Extensive use of an inert gas, nitrogen, is

made throughout the process. The following are examples of such use.

All pressure processing vessels are purged with nitrogen before they are used. Several volumes of nitrogen are used to displace the air in the vessel.

Vacuum processing vessels (stripping, flashing and boiling operation) are purged by evacuating and then breaking the vacuum with nitrogen. The number of times that this operation is repeated depends on the particular processing step. In the last five steps of the production process the purging operation might be repeated as many as four or five times. The crystalline vitamin A is centrifuged in a nitrogen atmosphere, and solvent is removed in a vacuum dryer in which nitrogen is used to break the vacuum. Finally, the crystalline vitamin is imbedded in its gelatin matrix; it is then stable and nitrogen is no longer required.

In setting up the process, purging operations were specified to make sure all oxygen would be removed. Now, studies are being made to determine the minimum amount of purging needed to be on the safe side.

Nitrogen is shipped to the plant in liquid form, several tank truck loads a week. It is discharged as a gas into the "Cascade" nitrogen system at the Pfizer plant. This system consists of 124 cylinders in two banks, 62 in each, all holding nitrogen at 2300 psi. The gas has a minimum purity of 99.99% and maximum moisture content of 15 gr per 1000 NPT cu ft.

From the "Cascade" nitrogen racks, pipelines convey the nitrogen through the plant at 80 psi. It is reduced to three different pressures through reducing valves, depending on where it is used in the process.

Results: Use of inert nitrogen throughout the process for manufacture of crystalline vitamin A helps to assure a final product of high purity by preventing decomposition and peroxide formation. While purification steps are still very necessary, they are not nearly as complex as they would have to be if oxygen were not excluded from the process. Yields are higher too, of course. Otherwise-hazardous operations are made safe by blanketing with inert gas.

Source: Nitrogen employed here is made by Linde Air Products Company, a division of Union Carbide and Carbon Corporation, Dept. CP, 30 E. 42nd Street, New York 17, N. Y. . . or for more information check CP 5836 on handy form, pages 2 and 3.

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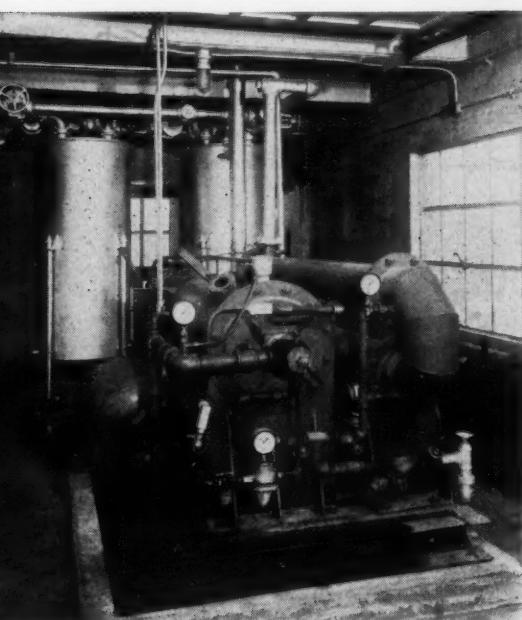
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Controlled Burning of Fuel
Produces Flue Gas Suitable for
Use as an Inert Atmosphere

Applied to purging of flammable
vapors from soybean solvent ex-
traction towers

PROBLEM: Solvent extraction process used at the three plants of Central Soya Company, Inc., Fort Wayne, Ind., requires special safety precautions during shutdowns every 6 to 8 weeks when workmen must inspect and clean towers. Vapors of the solvent hexane are highly inflammable and contact with oxygen must be limited so that a combustible mixture is not formed.

SOLUTION: Before workmen enter a tower, an inert gas purge is used to remove the vapors. Inert gas is then replaced by air. Volume or space in each tower amounts



Inert gas generator installed at the Decatur, Indiana plant is shown in foreground. Generator is located in a building separate from the extraction unit

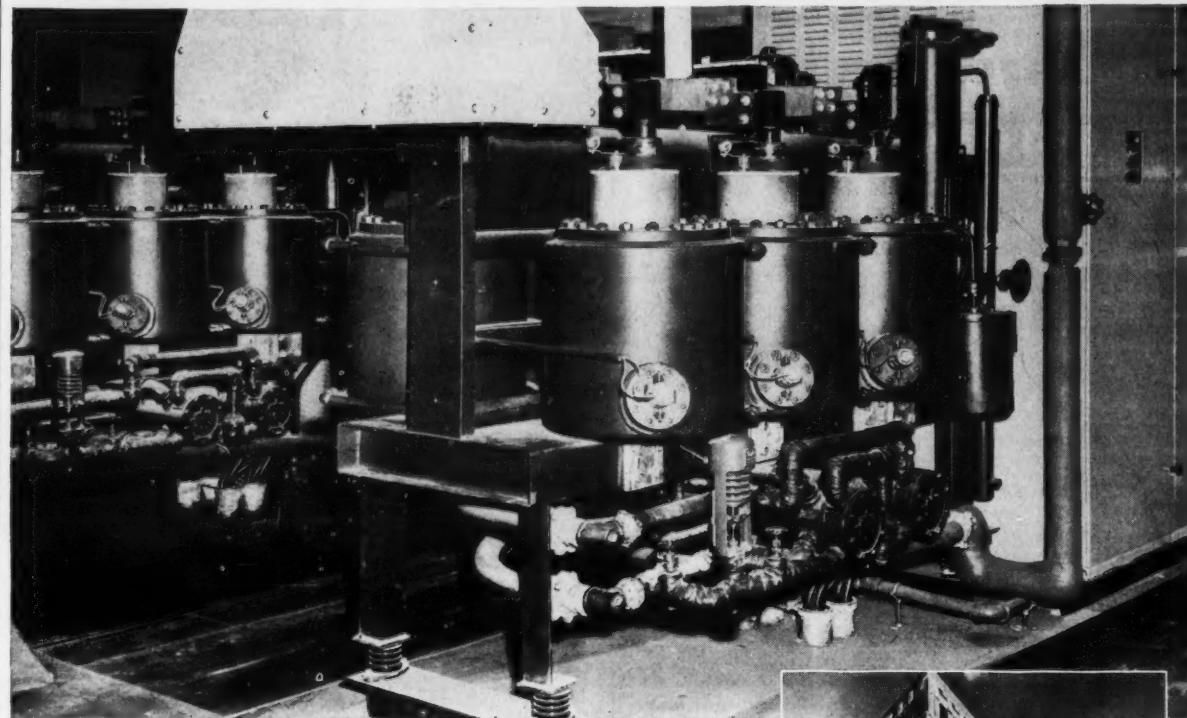
about 5000 cubic feet, so that about 15,000 cu ft of inert gas are used for each purge to assure efficient displacement of vapors and eliminate the possibility of explosions or hazardous working conditions in the extractor after air is admitted.

When the tower is ready to be returned to service, another gas purge is used to remove air before admitting the solvent. The inert gas generator used has a rated output of 6000 cubic feet per hour; purging operations require three to four hours.

Inert gas is produced by an oil-fired generator whose principal parts are an air and oil pumping unit, an adjustable proportioning oil burner, a horizontal water-cooled refractory-lined steel combustion chamber and

(Continued on page 12)

World's Largest Store uses 5000-kw Rectifier Installation



Macy's replaces d-c generating plant with G-E IGNITRON RECTIFIERS

When this famous New York store decided to discard its d-c generating plant and buy power, it had a problem. A considerable portion of its equipment required d-c power but only a-c power could be bought. After considering various methods of power conversion, Macy's chose dependable, proved-in-service G-E Ignitron Rectifiers to supply the 5000 kw of d-c capacity it needed.

The G-E Ignitron Rectifiers operate 24 hours a day, 7 days a week, with minimum attention.

In addition, it gives steadier, constant voltage over the entire load range and higher short-time overload capacity. Supplied as a complete packaged unit with transformer and metal-enclosed switchgear, the installation occupies minimum space.

For information on a G-E Ignitron Rectifier to fit your d-c power needs, ask your nearest G-E Sales office for a copy of bulletins GEA-5539 and GEA-5569 or write General Electric Company, Schenectady 5, N.Y.



Major portion of the power load of this huge store is supplied by the 5000 kw G-E Ignitron Rectifier installation.

324-3

GENERAL  ELECTRIC

When inquiring check CP 5837 on handy form, pgs. 2-3

CLEANS Fouled Heat Exchanger Tubes QUICKLY...

WILSON TP-301 CLEANER



This high speed tube cleaner is designed to increase output and minimize down-time. The improved Model TP-301 is the only tube cleaner which can remove deposits from completely plugged heat exchanger tubes . . . and other fouled straight tubes heretofore not considered practical to clean.

Many improvements, resulting from years of field experience, have been built into the new TP-301 cleaner.

- **MORE POWERFUL**—operating speed up to 3500 RPM at 90 psi utilizing 130 cfm.
- **LIGHTER WEIGHT**—only 15 lb.
- **SHORTER**—only 13" overall.
- **INCREASED CAPACITY**—from $\frac{3}{8}$ " up to $2\frac{1}{2}$ " or even 3" O.D. tubes up to 40 ft. in length.
- **LOW AIR PRESSURE**—operates on air pressure as low as 50 lb.
- **LOW HEAD ROOM NEEDED**—minimum practical working head room 3 ft.
- **COSTS LESS** than previous models.

VARIOUS CARBIDE BITS AVAILABLE



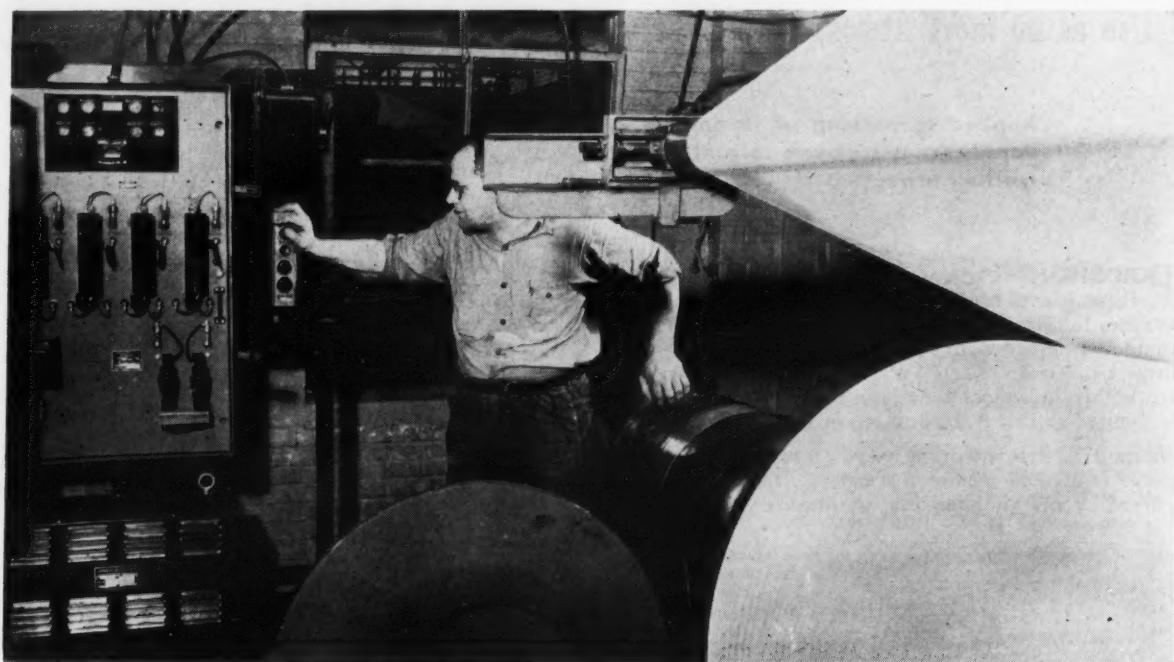
Send for Bulletin giving complete details on this man-hour and money-saving tube cleaner

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WILSON
TW-704A
TUBE CLEANERS • TUBE EXPANDERS

When inquiring check CP 5838 on handy form, pgs. 2-3

New Solutions OF PROCESSING PROBLEMS



Electronic drive unit eliminates need for manual speed setting—makes higher production and better quality possible

Electronic Control Replaces Guesswork in Maintaining Proper Tension at Roll

Production on this operation has been increased 25% in solving a quality problem of reeling

PROBLEM: In coating paper at Lee Paper Company in Vicksburg, Michigan, the rolls of finished paper were unsatisfactory because they were not always compact, and often varied badly in density. This was due to the fact that while the coating equipment produced finished paper at a constant rate, the take-up by the collecting roll tended to be much faster as its diameter increased.

In addition, operation at that time called for frequent shutdowns while the collecting roll speed was manually adjusted. These adjustments were made by guess and did not always remedy the situation.

Solution: It was realized that in order to produce a uniform roll, adjustment had to be continuous rather than stepwise. A General Electric Thy-mo-trol drive was installed on the collecting roll. This drive, while permitting any desired change in the overall speed of the unit (including the coating equipment), compen-

sates for the tendency of the collecting roll to increase tension as it grows. Tension of the paper being rolled is controlled within $\frac{1}{2}$ of 1%.

Thy-mo-trol uses a sensing element and electronic brain to control the drive motor through thyratron rectifier tubes. The response of the system has proven fast and accurate.

Results: The company's Chief Engineer reports that paper rolls produced with the new unit are neat and uniform. By setting the control for an optimum tension, all the rolls have been made more compact. Former production of the winding equipment has been stepped-up from eight to at least ten rolls per day. After two years of service the equipment is still running smoothly and has needed no major repair work.

Source: General Electric, Dept. CP, Schenectady 5, N. Y. . . or for more information check CP 5839 on handy form, pages 2 and 3.

Dynel filter cloths last 4-16 mos.
on hot alkali chloride brines
and caustic solutions . . .

Foote Mineral Company's filter material bill is half what it was; production is higher than before

Problem: Because of the high corrosive nature of slurries filtered at the Exton, Pa., plant of Foote Mineral Company, the filter cloths had to be replaced frequently. This practice was not only undesirable because of the cost of filter cloth . . . it also lowered production due to the line being shut down during cloth changes.

The cloths are used on filter presses and drum filters. Temperatures range from 70 to 200°F. Within this temperature range, 25% alkali chloride brines and up to 30% caustic solutions are filtered.

Solution: In August, 1950, Foote Mineral began using dynel filter cloths and have been using them since. Dynel is the acrylic staple fiber produced by Union Carbide and Carbon Corporation. Since it is a spun staple, rather than a continuous filament, dynel gives filter cloth a full-bodied, resilient texture which makes it easy to seal the press without using excessive rim pressures.

Advantages of dynel as a filter fabric include its high resistance to practically all acids and alkalis and most solvents, its dimensional stability, its wet and dry strength, resistance to bacterial action and mildew, ease



View of filtration operation at Foote Mineral Company

of cleaning, and its non-blinding characteristics. There are some limitations in its use in extremely hot acid solutions of an oxidizing nature.

At present, the cloths are available in a range of weights from 4.1 oz to 18.5 oz per sq yd. The heavier weights are very similar to cotton duck cloths (physically) and are highly successful in various types of plate and frame and clarifying presses. A method has been developed for cutting the cloth with a heated knife which seals off the edge and gives a finish reported to be superior to hemming.

Results: Cost of filter material has been reduced to less than half what it was. Life of the dynel cloth is many times longer (four to six months). This means higher production because of less frequent shutdowns for cloth replacement.

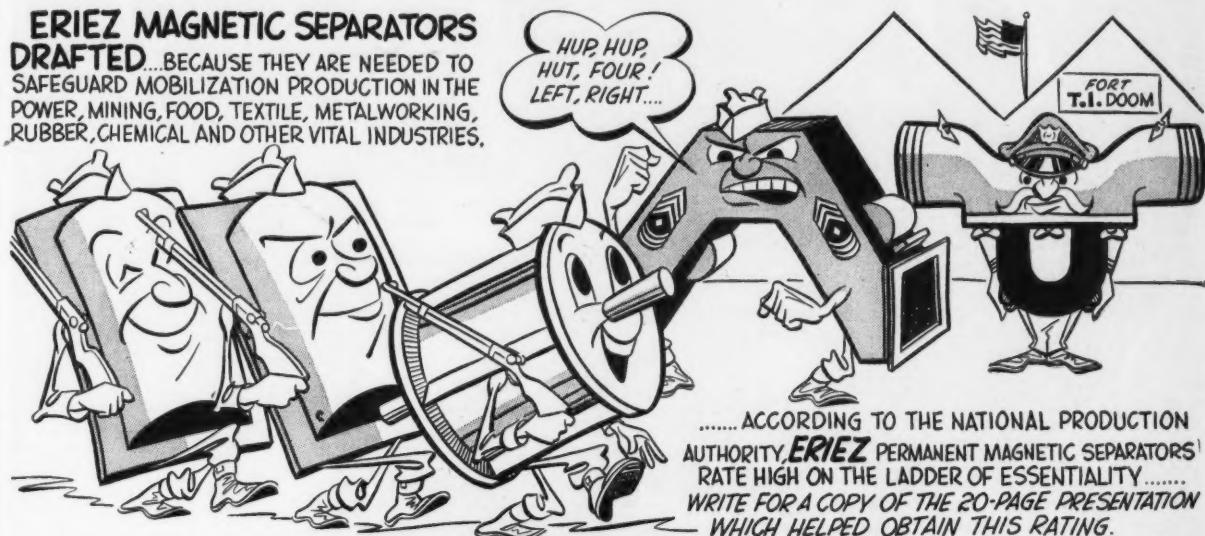
Source: Dynel filter cloths are fabricated by Filtration Fabrics Division, Filtration Engineers, Incorporated, Dept. CP, 155 Orton St., Newark 4, N. J., from dynel fabric designed and woven by the U. S. Rubber Company . . . or for more information check CP 5840 on handy form, pages 2 and 3.



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WHICH HELPED OBTAIN THIS RATING.



When inquiring check CP 5841 on handy form, pgs. 2-3

This Mix-Muller

has 10 parts
7 TESTS*

TO SOLVE
A DIFFICULT
MIXING PROBLEM

Specially designed
Simpson Mix-Muller
built for exper-
imental processing
work in a large
eastern plant.



YOUR particular mixing problem may not be as complex as the one which required the 7-point solution outlined here. But no matter what your requirements may be—there is a Simpson Mix-Muller qualified to handle the job, in 10 different models, with capacities from 1/10 to 30 cubic feet per batch.

All of these models offer the proven *intensive mulling* principle of controlled mixing, to blend all types of dry, semi-dry and pasty materials better, faster, and at lower cost. These modern Mix-Mullers are also available with all necessary equipment for use as reaction vessels, where reactions, heating, cooling, pressure or vacuum can be scientifically controlled.

Write today for details on the complete line of Simpson Intensive Mix-Mullers.



SIMPSON

THE SIMPSON COMPANY
Div. of National Engineering Co.

624 Machinery Hall Bldg., Chicago 6, Ill.

When inquiring check CP 5842 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

(Continued from page 9)

a two-stage U-type horizontal, direct contact spray cooler. (Generators are also available for operation with gas instead of oil.)

Burner mixing valve is adjusted for the proper air-oil ratio required for complete combustion and can also be adjusted for reduced firing rates. Generator is fired by inserting a hand torch through a combination lighting and observation hole located in the combustion chamber wall. Under controlled operating conditions, which include a reasonably constant discharge pressure not greater than 3 PSIG, the saturated inert gas analysis is approximately 85% nitrogen, 14% carbon dioxide, 0% carbon monoxide, and 0.5% oxygen. Fuel oils not heavier than No. 3 grade provide best results. Flue gases produced in the combustion chamber are cooled by the spray cooler to a minimum of 15 degrees above the water supply temperature.

Control circuit of the motor starter includes two safety control switches which stop the generator in event of fuel, water or flame failure.

As shown in photo, generator is completely assembled on a structural steel base mounted on a foundation. Two vertical tanks in the background are coke filters through which the inert gas is passed. They remove any free moisture carried over from the spray cooling system and also some impurities as sulphur compounds or carbon if combustion is not quite complete.

Results: According to Norman F. Kruse, vice-president and technical director of Central Soya Co., Inc., the generators have not only provided additional protection required by underwriters and desired for employees, but they have considerably reduced down-time required to purge the towers.

The protection afforded by this purging system plus other safety features including sprinkler systems, fire walls and doors, and proper ventilation have enabled the company to reduce the number of insurance policies covering its three plants from 500 to three. This reduction has, in turn, resulted in a saving of approximately \$6000 per month in insurance premiums, according to company officials. Coverage under the three insurance policies provides for periodic variations in inventory, depending on raw materials, materials in process and finished inventory.

Source: Inert Gas Generators are produced by Roots-Connersville Blower Corporation, Dept. CP, 900 West Mount St., Connersville, Ind. . . or for more information check CP 5843 on handy form, pages 2 and 3.

Production profitable after recovering 15% of product formerly lost up stack . . .

filter bags made of synthetic fiber withstand heated gases, acidic fumes that jinxed other fabrics

Problem: Because the efficiency of its recovery system dropped 60 to 70% after initiating production of an extremely fine particle size carbon black, a firm finally ended up by selling its product at a loss. Loss of black up the stack imposed an additional problem—that of atmospheric contamination. A secondary filter system, using fabric bags, was tried as a solution. This failed because conventional filter fabrics just wouldn't withstand the heated gases and acidic fumes evolved by the process.

Solution: Already experienced in the use of filters,

CHEMICAL PROCESSING

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AUGUS

One firm investigated several fabrics of synthetic fibers. They found that 'Orlon' acrylic fiber was suited to their needs, and erected a commercial size filter unit with bags made of this synthetic.

Orlon has good-to-excellent resistance to mineral acids, and fair resistance to weak alkalis. It is not harmed by common solvents, oils, greases, or neutral or most acid salts. Dimensional stability to heated gases and resistance to acids and acidic fumes at elevated temperatures extend their properties.

Results: Filter system using fabric bags of Orlon synthetic fiber is collecting 10 to 15% of the carbon black formerly being lost, permitting profitable production. Atmospheric contamination is no longer a major concern. Even though the plant is subjecting the bags to higher temperatures and putting through more gases than with bags of conventional fabrics, a spokesman reports that the Orlon bags are apparently just as good after four months of service as when they were first installed.

Long life of the bags has reduced the cost/bag/operating nearly in half, not to mention reductions in operating time lost for bag changes and labor costs of making frequent changes.

This plant is presently converting its whole carbon black recovery installation of 10,000 bags to fabrics made of this acrylic fiber.

Source: Orlon is a product of E.I. du Pont de Nemours and Company (Inc.), Dept CP, Wilmington 98, Del. . . . or for more information check CP 5844 on handy form, pages 2 and 3.

**Yield of 8,000 bbl in 2 months
achieved by coal-to-oil
conversion plant . . .**

process substitutes cheap iron catalyst for tin previously used in coal hydrogenation

More than 50 railroad car loads of coal have been converted to synthetic oil at the Coal Hydrogenation Demonstration Plant of the Bureau of Mines at Louisiana, La., during last April and May — nearly 8,000 barrels of synthetic oil, or 3.7 barrels of oil for each ton of moisture-free coal processed.

The synthetic oil being produced in this plant is being converted to high octane gasoline in vapor-phase operations. It is being tested by the Armed Forces.

Among processing features considered of significant value in conserving strategic materials for defense was substitution of a highly efficient and cheap iron catalyst for scarce tin catalyst, formerly used in coal hydrogenation. This readily available iron catalyst also makes it necessary the use of other catalysts containing such strategic materials as cobalt, nickel, chromium or molybdenum. Mechanical improvements tested during the run included a change to welded hot pipe construction in the converter stalls, reduction in converter volume, the use of a new type spring-loaded and lubricated injection pump packing, as well as the use of new valve material more resistant to erosion.

Although complete operating data have not been compiled, reports state that Kentucky coal showed a high degree of liquefaction at a conversion pressure of 7,700 psi and temperature of 875°F with a hydrogen partial pressure of 6,100 psi.

Summarized from release issued by Bureau of Mines, Department of the Interior, Washington, D. C.)

AUGUST, 1951



Just a Corner of the World's Largest Line

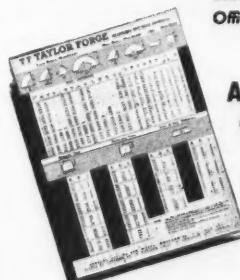
Illustrated above are the stock sizes of long-radius WeldELLS in a single weight and material. Multiply this group by all the weights, all the types and all the materials, and you have the world's largest line of forged fittings for pipe welding.

The Taylor Forge line grew to this size because nothing less could meet the demand for fittings of Taylor Forge design, quality, accuracy, uniformity.

Make this your final reason for insisting on the WeldELL line for every fitting and flange requirement. Coupon brings new data sheet described below.

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Offices in all principal cities • Plants at: Carnegie, Pa.; Fontana, Calif.; Hamilton, Ont. Canada



A volume of data on a single sheet

Data on welding fittings and flanges condensed on two sides of a durable, varnished, letter-size card. Particularly useful for the pipe designer. Coupon brings your copy.

Send one of your fitting and flange sheets to:

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515-0851 Mail to Taylor Forge & Pipe Works, P. O. Box 485, Chicago 90, Ill.

When inquiring check CP 5845 on handy form, pgs. 2-3

ODS DIAPHRAGM PUMP



Announcing the 4 inch size!

THIS PUMP, recommended for handling clear chemical solutions as well as many different slurries, has a design capacity of 100 gpm (based on water) and is capable of operating against heads up to 200 feet. Feed sources can range up to 15 feet below the pump.

As with the smaller ODS Pumps, certain structural features are outstanding: (a) no linkage to the diaphragm which is a solid unpunched, unslotted, piece of flexible rubber or neoprene; (b) no stuf-

ring box or high speed moving parts. Three different types of valves are available: ball, flap or diaphragm.

Bulletin 309-R will give you full details of the full line of ODS Pumps which come in the following sizes: 1 1/2, 1 1/2 A, 2, 2B, 3 and 4 inch. We have the Olivite Acid-Handling Centrifugal Pump in several sizes which might be better than our ODS Pump for your requirements, particularly if they involve highly corrosive solutions.

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When inquiring check CP 5846 on handy form, pgs. 2-3

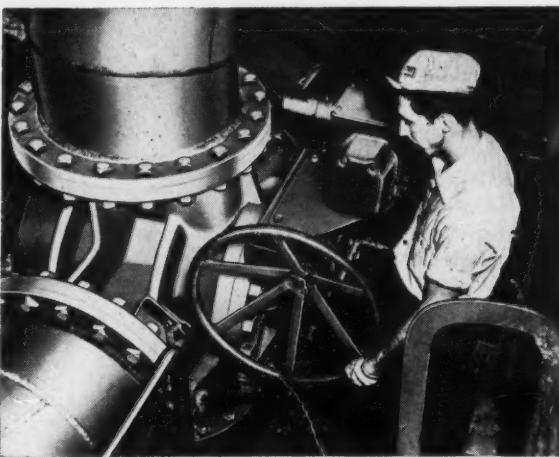
NEW SOLUTIONS of processing problems

Flow is reversed by single 4-way valve . . .

four straightway valves would have been required with attendant piping, coordination trouble, etc.

Problem: At its desert plant at Trona, California, the American Potash & Chemical Corporation pumps brine from Searles Lake for conversion into potash, soda ash, borax, salt cake, and other products. Process requires reversal of flow of concentrated brine between a large evaporator and a tank. Two separate evaporator-tank systems are called for.

Straightway valves were ruled out in the design of the plant because at least four would be required for effi-



Electric-motor operated 4-way valve handling brine concentration at American Potash & Chemical Corporation

ent reversal of flow. Then too, manipulation of four valves would be difficult, piping would be involved, and a constant danger to equipment would be present due to inability to coordinate valves' opening and closing.

Solution: A single 4-way Nordstrom Multiport plug valve was selected and used in the 24" flow line of each system. Valves are electric-motor operated and push-button controlled. Flow reversal is accomplished by rotating the plug 90°.

Results: Just 2 valves are required for flow reversal, compared with 8 that would be required with straightway valves. Manipulation by motors is convenient, no elaborate piping is involved, and coordination is no longer a problem.

Source: Nordstrom 4-way Multiport valve is a product of the Rockwell Manufacturing Company, Dept. CP, 400 N. Lexington Ave., Pittsburgh 8, Pa. . . . or for more information check CP 5847 on handy form, pages 2 and 3.

Make-up feedwater treatment — was \$23,000 by evaporation, is \$6,000 by deionization . . .

initial cost of deionization equipment estimated to be 60% of that of evaporators of equal capacity

Problem: The Waukegan power plant of the Public Service Company of Northern Illinois originally employed evaporators for treating make-up feedwater for its recently installed high-pressure boiler turbine units. Raw water comes from Lake Michigan with about 156 ppm in

For protection against Air Damage —

USE

MAGNOLIA
AIRCO
NITROGEN
for
oxygen-free
atmospheres

For deaerating, processing, storing and packaging fats and oils, in the packaging of dehydrated foods, and other processes requiring an inert atmosphere, use Magnolia Airco Nitrogen. It gives positive protection to practically any material susceptible to oxidation and corrosion.

Magnolia Airco is one of the leading producers, purifiers and suppliers of nitrogen in the southwest.

To meet your requirements Magnolia Airco can supply nitrogen in 224 cu. ft. cylinders, or, if your plant is conveniently located and is equipped with an internal pipeline, delivery in bulk may be made in trailers. For further information address our nearest office.



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When inquiring check CP 5848 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Niacet
TRADE-MARK

ACETONITRILE

NIACET Acetonitrile is a stable, clear, colorless liquid with an aromatic odor. It has a boiling range of 80 to 82°C., a purity of 99.0% minimum, and a specific gravity of 0.782 to 0.785 at 20°C.

REACTION MEDIUM

Acetonitrile is used as a reaction medium for reactions proceeding under ionic mechanisms. It has a high dielectric constant and is an excellent solvent for a wide variety of compounds. Some compounds which dissociate in water can be successfully dissolved in Acetonitrile.

PURIFICATION

Acetonitrile is a medium for the purification of compounds by recrystallization. The solubility of many compounds is affected by comparatively small changes in temperature, so that a saturated solution precipitates the solute readily in cooling. The volatility of Acetonitrile is an added advantage as all traces can be removed readily.

For further information
write to:

Carbide and Carbon Chemicals Company

A Division of
Union Carbide and Carbon Corporation



30 East 42nd Street, New York 17, N.Y.

"Niacet" is a registered trade-mark of
Union Carbide and Carbon Corporation

When inquiring check CP 5849
on handy form, pgs. 2-3

JUGUST, 1951

total ionized solids (as CaCO_3), 130 ppm total hardness (as CaCO_3), and 5 ppm silica concentration (as SiO_2). Estimated cost for treating 5-million gal of raw water (year's supply) by distillation was \$23,000.

Evaporators did not lend themselves to efficient operation of the system because the quantity of water required varied widely. Then too, distillation did not remove carbon dioxide and a great corrosion hazard was therefore always present.

Solution: Recent advances in water deionization by ion exchange resins led the company to investigate this means of water treatment. A system was installed that includes a duplicate set of cation, anion, and silica-removing elements, with one aerating tower for removing carbon dioxide. The cation exchange units have diameters of 8' and straight shell heights of 6'. The weak-base anion exchange units measure 6'6" square, and the strong-base anion units 6'6" x 7'6".

After salts have been converted to their respective acids in the cation exchange units, the strong acids are removed as the water passes through weak-base anion exchange resins — Amberlite IR-4B carrying most of the burden. Silica and the remaining traces of carbon dioxide are removed in the final unit by the strong-base anion exchange resin — Amberlite IRA-400.

Cation exchange material in this installation uses two charges, each 125 cu ft. Each weak-base anion unit contains 100 cu ft, and each strong-base anion unit (for silica adsorption) contains 85 cu ft.

About 3.26 lb of 66° Bé H_2SO_4 /1000 gal of water treated are required for regeneration of the cation exchange unit. Each strong base anion exchange unit requires 0.40 lb of caustic for the same quantity of water treated. Caustic is recovered and used for regeneration of the weak-base anion exchanger, thus appreciably reducing operating costs.

Between regenerations each cation exchange unit is able to condition 92,000 gal of water, each weak-base unit 480,000 gal, and each strong-base unit 750,000 gal.

Results: Treated water now averages 3 ppm in total ionized solids, has an electrical resistance of approximately 200,000 ohms/cm, a silica concentration of about 0.2 ppm, and zero hardness. Total cost for deionization runs about \$0.12/1000 gal treated (including the estimated cost of resin amortization as well as that of chemicals required for regeneration). Estimated overall cost for 5-million gal of water deionized is \$6,000 — a 73.9% reduction over the cost of distillation.

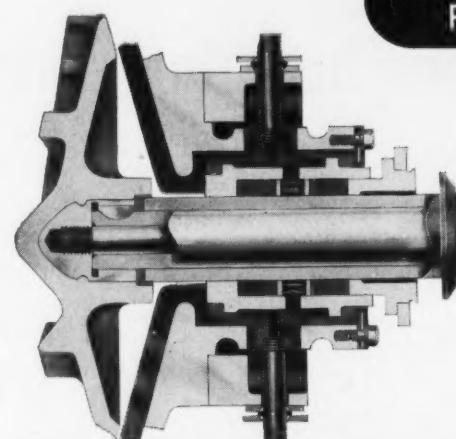
Deionization is producing water of consistent quality despite wide variations in the quantity required — a variance intolerable in the normal operation of evaporators. Initial cost of deionization equipment was estimated to be approximately 60% of that of evaporators of equivalent capacity. Additionally, ion exchange units require less space than do evaporators, though some of this might be forfeited where raw water requires pre-treatment before reaching the ion exchange unit.

Cost of deionizing treatment is much lower than that of evaporation in view of heat losses suffered through evaporator blowdown and degradation of heat in the evaporator to a low pressure. Since carbon dioxide is completely removed by deionization, corrosion of piping and equipment is reduced to a bare minimum, offering substantial maintenance savings.

Source: Ion exchange resins are products of the Rohm & Haas Company, Dept. CP, Washington Square, Philadelphia 5, Pa. . . . or for more information check CP 5850 on handy form, pages 2 and 3.

OLIVITE Acid-Handling PUMP

How It Answers the Problem of Leakage



Illustrated is the stuffing box assembly of the Olivite Acid-Handling Pump.

Since pump leakage is probably the Number 1 Enemy when handling corroding solutions, note how in the Olivite Pump, extra precautions are taken to prevent leakage:

- 1 The stuffing box floats on two rubber rings which permits shaft and packing movement. The packing is not crushed nor is the replaceable shift sleeve scored.
- 2 The lantern ring permits circulation of the lubricant, water, solution, or grease.
- 3 The resilient packing is of acid-resisting material styled for long life.
- 4 Simple spring loaded wing nut adjustment permits application of correct and proper pressure by the yoke on the gland and packing. No "monkey" wrench required.

Thousands of Olivite Acid-Resisting pumps have been supplied the Process Industries during the past 20 odd years. The values of these years of design, manufacturing and operating experience are embodied in every 1 1/4", 2" or 4" Olivite Pump you purchase. Bulletin 308-R provides full details. When writing us please outline your pumping problems.

New York 18 — 33 W. 42nd St. Chicago 1 — 221 N. LaSalle St.
Oakland 1 — 2900 Glascott St. San Francisco 11 — 260 Calif. St.
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OLIVER UNITED FILTERS INC.

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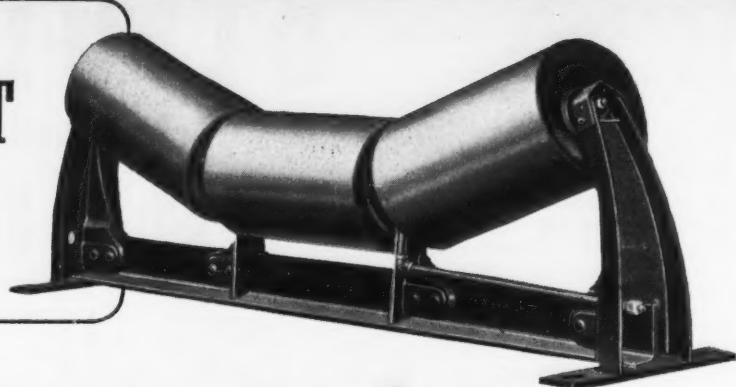
SOUTH AFRICA

E. L. Bateman, Pty., Ltd.

Johannesburg, Transvaal

When inquiring check CP 5851 on handy form, pgs. 2-3

LINK-BELT IDLERS



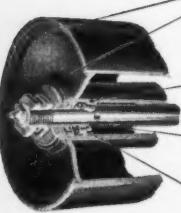
...cut your handling costs 3 ways

Concentrically counterbored and journaled full-length central tube and counterbored roll shell are continuously welded to dished heads to maintain balance and bearing alignment.

Precision roller bearings maintain alignment.

Large grease reservoir prolongs lubrication intervals.

Grease-in-dirt-out, cartridge type unit seal preserves lubricant. No springs, no loose parts, no sliding metal-to-metal contact.



CUTAWAY OF "100" ROLL

Yes, you save money three ways when you specify Link-Belt Roller Bearing Idlers—
 (1) Reduced maintenance, thanks to better lubricant retention and longer-lasting adjustment.
 (2) Less "down-time," thanks to husky, self-aligning roller bearings and efficient sealing.
 (3) Lower power requirements, thanks to smooth anti-friction action.

And by standardizing its design, Link-Belt gives you the famous chip-handling 45° Idler at a cost lower than you'd expect. You can choose from the full Link-Belt line of standard and heavy-duty 20° troughing, impact-cushioning, belt training and flat belt idlers in a wide range of roll diameters and belt widths.

LINK-BELT
ROLLER BEARING IDLERS

LINK-BELT COMPANY
Chicago 9, Indianapolis 6,
Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, Factory Branch Stores and Distributors in Principal Cities. 12,540-A

When inquiring check CP 5852 on handy form, pgs. 2-3

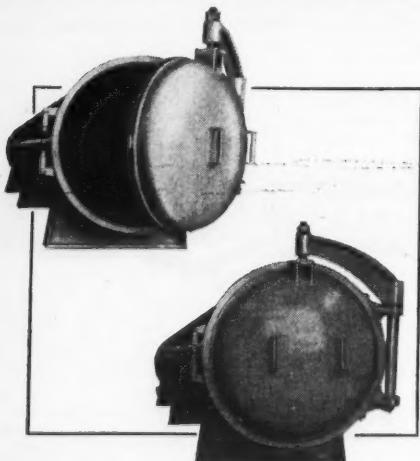
"AN OPEN-AND-SHUT" PROPOSITION



BLAW-KNOX QUICK OPENING DOORS

for curing chambers, vulcanizers, and similar equipment, are *quick-tight-boltless*. In diameters up to 10 ft., they may be used on pressures up to 250 psi. They are rim-locking; manually or mechanically operated.

This is only one of a long line of Blaw-Knox standard equipment items for the Process Industries. See Blaw-Knox Bulletin No. 2355.



PROCESS EQUIPMENT DEPARTMENT

BLAW-KNOX

DIVISION OF BLAW-KNOX COMPANY

2076 FARMERS BANK BUILDING, PITTSBURGH 22, PA.

Other Offices in Principal Cities

When inquiring check CP 5853 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

1° error in averaging temp of 150,000 gal stored oil means 60 gal loss . . .

averaging resistance thermometer gives temp in seconds; assures fair measure in bulk transactions

Problem: The oil industry has continually had trouble with obtaining average temperatures of oil in its storage tanks. The main reason they have wanted to read these temperatures as closely as possible is an economical one. When a customer contracts for so many gallons of oil, he expects to get the amount he asks for (volumes are always calculated at 60°F, a standard practice). If the actual temperature of the oil is not read correctly, he will get more or less of the product than stated in the contract, due to the oil's different specific volumes at different temperatures. For instance, an error of only 1°F in reading for 150,000 gallons of fuel oil amounts to about 60 gallons — and somebody loses money on the deal.

Standard practice has been to have a man take a large number of readings at different levels with a cup-case mercury thermometer, and these are averaged. Even though the man works as carefully as possible — sometimes spending two hours on top of the tank — the human element is present, and errors are bound to occur.

Solution: Inadequacies of this measuring method are overcome by the development of an averaging resistance thermometer — Weston Model 918. A description of this instrument was carried in the April, 1951, issue of **CHEMICAL PROCESSING**, page 59.

Briefly, it consists of a flexible resistance bulb assembly, a meter, and an oil level selector, with the meter and selector enclosed in a meter housing for protection while the bulb assembly is placed permanently inside the tank. This type of assembly eliminates the necessity for obtaining and averaging several "spot" temperatures and permits obtaining an average temperature through the vertical column of oil in one reading.

An advantage of the thermometer is that the meter can be located either at the top of the tank, or at the bottom, for more convenient readings. Special installation permits placing the meter in a central control house, if desired, and the thermometers for a number of tanks can be connected to meter in one convenient station.

The mechanical design of the thermometer permits installation of the assembly without taking the tank out of service. The instrument is rugged and the electrical energy is so small that it is well below arcing values, thus meeting general safety requirements. Offering optional control, it is particularly advantageous under adverse weather conditions and when making a number of consecutive deliveries of small quantities.

Results: Average temperature readings with the meter are accurate to within 1/2°F regardless of the product, product level, temperature gradient of the product in the tank, or weather conditions. Readings can be obtained in a few seconds as compared with 2 hours sometimes required by using cup-case thermometers. If, for example, a tank contains 20 feet of product, the gauger merely sets the knob at the 20' point on the selector switch and obtains the average temperature of the product immediately from the dial of the meter.

Source: Model 918 is a development of the Weston Electrical Instrument Corporation, Dept. CP, 641 Frelinghuysen Ave., Newark 5, N. J. . . or for more information check CP 5854 on handy form, pages 2 & 3.

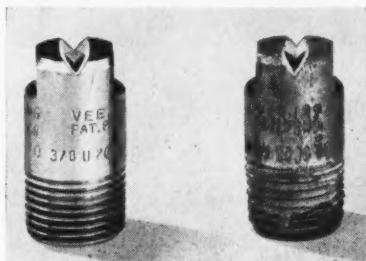
NEW SOLUTIONS

Vee jets of Carpenter 20 outlast 18-8 stainless six times . . .

jets used with 8% sulfuric acid at 160 degrees F

Problem: Stainless steel (18-8) vee jets used in a metal pickling process by The R. C. Mahon Co., Detroit, had to be replaced every two months due to severe corrosion by 8% sulfuric acid at 160° F.

Solution: Company substituted



18-8 jet on right shows severe corrosion after short service. Carpenter 20 jet at left is still in excellent shape after 13 months of service.

Carpenter stainless steel No. 20 for Type 18-8 as a material of construction for the jets.

Results: Jet life has been increased more than six times. After 13 months of use, jets made of No. 20 are still in excellent condition.

Source: The Carpenter Steel Company, Dept. CP, Reading, Pa. . . or for more information check CP 5855 on handy form, pages 2 and 3.

How to use steam more efficiently

Eight-page, two-color booklet tells how economies can be effected in using steam more efficiently. In the form of 16 questions and answers, this publication is slanted for executive, rather than maintenance department reading. Booklet 2171 is issued by Sarco Company, Inc., Dept. CP, Empire State Bldg., New York 1, N. Y. When inquiring specify CP 5856 on handy form, pages 2 and 3.

Tells how to analyse for methoxychlor

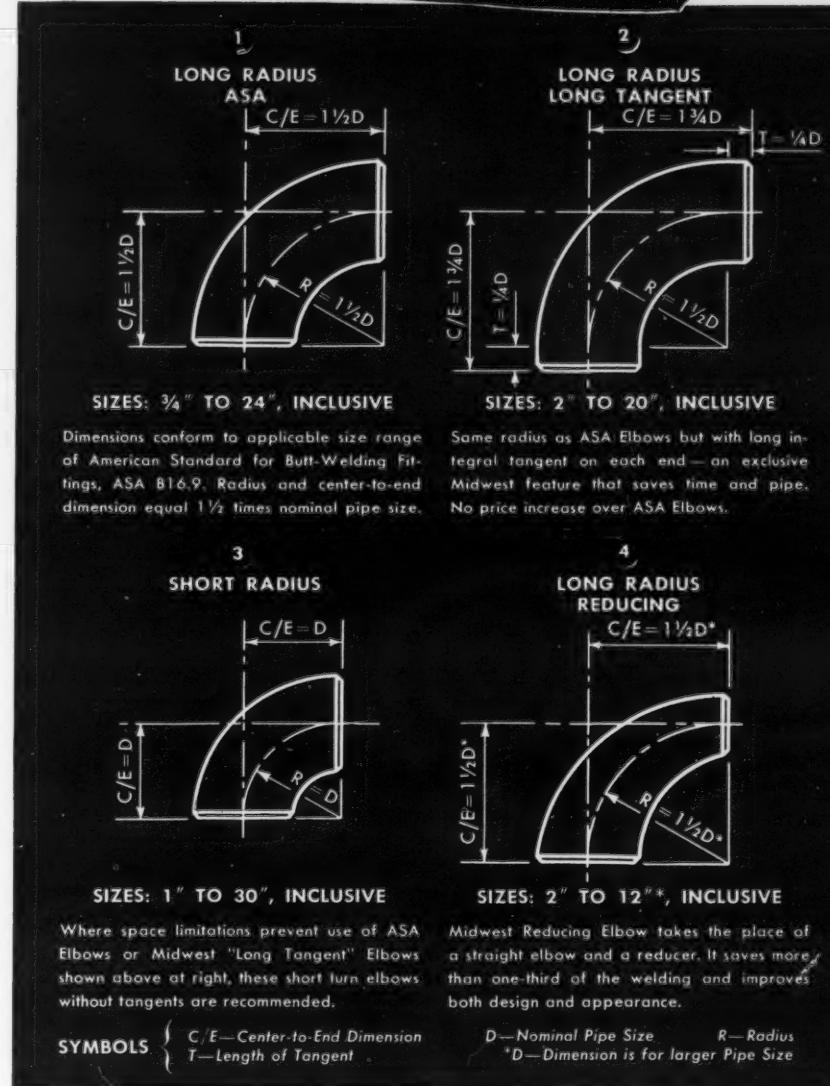
"Methoxychlor-Analytical Methods" is issued by Grasselli Chemicals Department, E. I. du Pont de Nemours & Co. (Inc.), Dept. CP, Wilmington 98, Del. When inquiring specify CP 5857 on handy form, pages 2 and 3.

For more information on product at right, specify CP 5858 . . . see information request blank between pages 2-3.

Improvements and economies in welded piping

result from this *Variety* of

MIDWEST ELBOWS



The variety of Midwest Welding Elbows is particularly important because of the exceptional latitude in design and economy in erection that it provides. For example, the Midwest Long Tangent Elbow permits faster, easier, more accurate lining up with pipe . . . removes weld from point of maximum bending stress . . . often eliminates a short nipple and its extra weld. Slip-on flanges are easily used with minimum change in flange and fitting.

This "Variety" is only one of several reasons why many users prefer Midwest Welding Elbows.

MIDWEST
WELDING FITTINGS
Improve Piping Designs
and Reduce Costs



Only MIDWEST
offers this
VARIETY

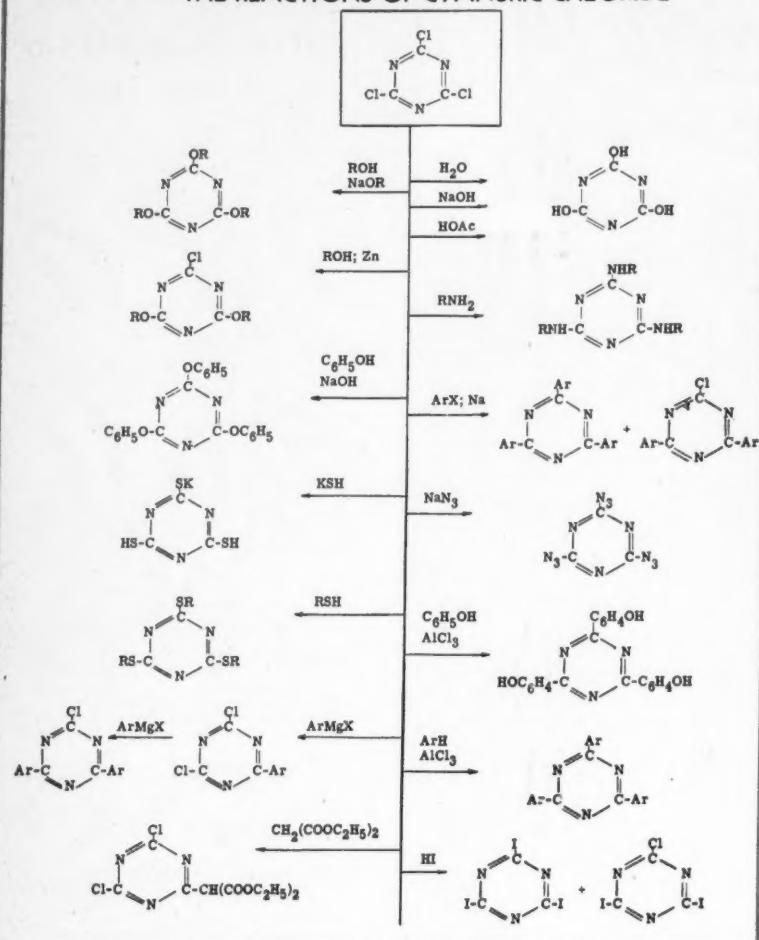
MIDWEST PIPING & SUPPLY CO., Inc.

Main Offices: 1450 South Second Street, St. Louis (4), Mo.

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THE REACTIONS OF CYANURIC CHLORIDE



SES: A large number of new dyestuffs have been made by linking together already known dyestuffs or intermediates through a triazine ring. The triazine ring can be used in a manner similar to that in which the anhydrides or halides of organic acids have long been utilized, phosgene being the most commonly used of these. Products may be obtained in each of the following classes: 1) acid dyes for animal fibers, 2) mordant dyes for animal and vegetable fibers, 3) direct cotton dyes, and 4) anthraquinone vat dyes.

Optical bleaching agents can be made with cyanuric chloride as an intermediate. One of the better known of these agents is Blankophor B, a "permanent" finish that is not removed from textile fibers by washing.

In the manufacture of **rubber chemicals**, cyanuric chloride appears to have value in preparing antioxidants and vulcanization accelerators. One of the accelerators has been found to cause vulcanization to proceed smoothly at 140°C, but not to accelerate the vulcanization at all at 100°C, thereby avoiding scorching or premature vulcanization.

Derivatives of cyanuric chloride have possibilities in the **pharmaceutical field**. Some have been found to have valuable therapeutic properties in diseases such as syphilis and African sleeping sickness. Another appears to have value as a bactericide and in treating certain diseases.

Enlarged Production Facilities Assure Ample Supply of Cyanuric Chloride

Chemical is useful in manufacture of dyestuffs, pharmaceuticals, possibly surface active agents, explosives, and plasticizers

Other products made from cyanuric chloride have potential applications as moth-proofing compositions, surface active agents, tanning agents, plasticizing agents, resins and plastics. Cyanuric triazide belongs to the group of the most powerful and brilliant initiating explosives.

Features: In April 1951, production started in the first unit of a new plant, and a second unit, now going into operation, will enable the manufacturer to supply all present demands. Present and future shortages of many coal tar intermediates now being felt by dyestuff manufacturers may be lessened by this raw material offering them a reliable source of supply.

Important to dyestuff manufacturers is the fact that the triazine ring can be used to link together derivatives of 1,8-aminonaphthols, including H Acid, which are not amenable to phosgenation. Then too, three different molecules can be condensed through the triazine ring, thus giving rise to a greater diversity of products. Another advantage is the fact that the triazine ring often confers on products an unexpected affinity for vegetable fibers so that colorless intermediates containing this nucleus can be fixed on the fiber and then transformed into a dye either by diazotization and coupling on the fiber, or by development with a diazo compound.

Description: Cyanuric chloride is a colorless, crystalline solid with a pungent odor. Theoretical molecular weight is 184.4, specific gravity is 1.32 and melting point

about 146°C. It is readily soluble in acetic acid, ether, heptane and acetonitrile, but sparingly soluble in benzene, acetone, chloroform and nitrobenzene. Below 10°C, the compound is almost insoluble in water; above this temperature, hydrolysis is rapid.

No depolymerization occurs when cyanuric chloride is heated to 190°C. It has been refluxed without decomposition. The compound is readily hydrolyzed by water vapor; therefore, contact with moisture should be avoided. It should be handled in a manner similar to anhydrous aluminum chloride.

Some reactions of cyanuric chloride are shown in the accompanying diagram. The chlorine atoms of cyanuric chloride have none of the =N-Cl reactions. They are more active than those in alkyl chlorides, but less active than those in acyl chlorides. Although cyanuric chloride is structurally similar to 1,3,5-trichlorobenzene, the chlorine atoms of cyanuric chloride are much more reactive. Cyanuric chloride reacts readily with compounds containing active hydrogen atoms and even reacts with benzene under the proper applied conditions. The compound reacts with amines and related compounds in three steps. One chlorine atom is replaced at 0°C, the second at 30-50°C, and the third at 90-100°C. Material currently available from this manufacturer contains a minimum of 97% cyanuric chloride.

Source: American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. is the maker... or for more information check CP 5859 on handy form, pages 2 and 3.

Molybdenum Items with Siliconized Coating Serviceable at Temperatures to 3000°F

Heating elements for electric furnaces,
spark gaps for burner ignition systems,
crucibles for laboratory are uses

SES: Siliconized coating on items fabricated from molybdenum metal will withstand air or combustion atmospheres, either reducing or oxidizing, at temperatures up to 3000°F. In general, items are serviceable beyond the temperature range of nickel-chromium and similar alloys. Heating elements for electric furnaces and spark gaps for burner ignition systems can be made from wire. Crucibles, nozzles, jets, flame holders, mixers, thermocouple wells, gas sample tubes, probes, and combustion chambers extend applications.

Although coated molybdenum may be heated in contact with metallic chromium, Sauereisen cement, and water glass, the coating is not recommended for use at high temperatures in contact with molten glass, strong alkalis (NaOH and lime), metals and alloys such as copper, iron, nickel, cobalt, chromel, nichrome, and stainless steels. Siliconized coating is not recommended for wire smaller than 0.030" diameter when such wire is intended for prolonged service as resistance heating wire.

Features: Not only impervious to oxidation, the coating appears to be unattacked by nitrogen, carbon dioxide, carbon monoxide, sulfurous, or hydrocarbon atmospheres commonly resulting from combustion. Its electrical conductivity is high, and in general, it resists the action of chemical solvents.

Coated molybdenum pieces can be worked to a limited extent at high temperatures even though the coating is very hard. Siliconized, molybdenum is highly resistant to thermal shock. Bond between the coating and the base metal is integral — no flaking, peeling, or spalling.

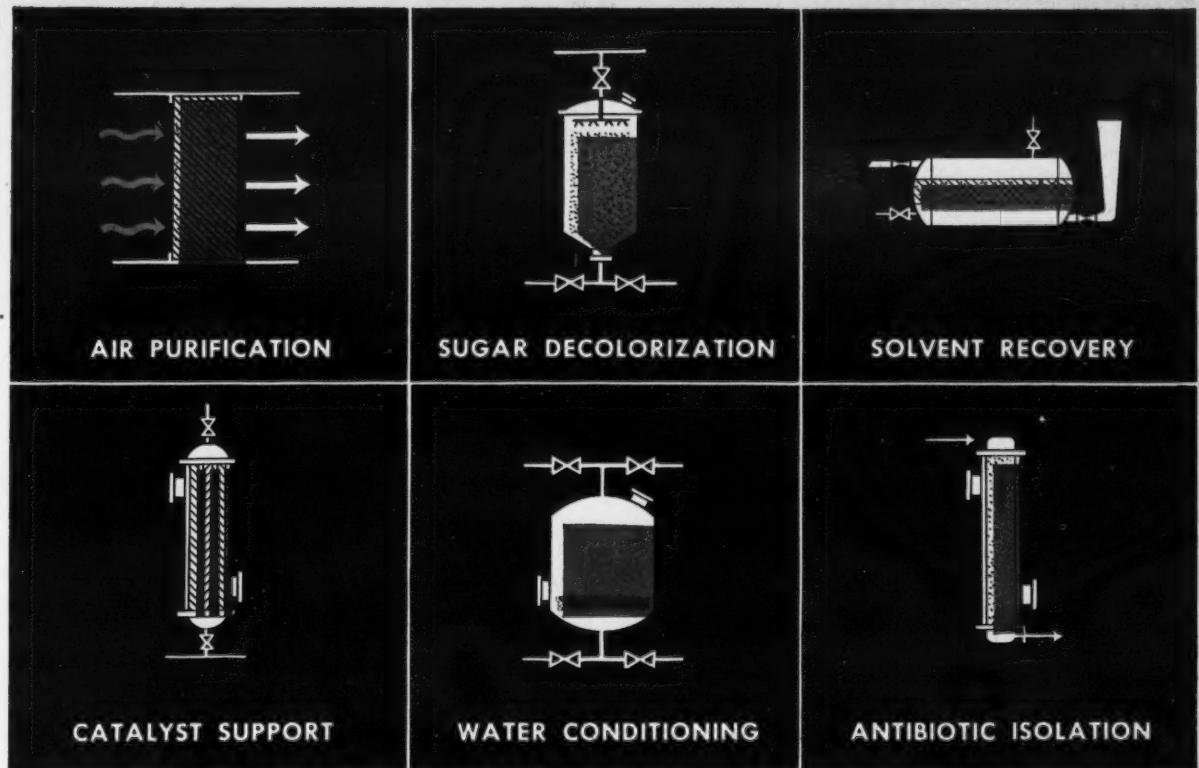
Description: Coating is a molybdenum silicide, and is not to be confused with vitreous or ceramic coatings. Its life is a function of temperature. From extended tests, the accompanying table indicates the life that may be expected in still air under conditions of no mechanical stresses or loads.

Temperature, °F	Expected Life, Hours
1500	6000
2000	2000-2500
2500	200-800
3000	50-300

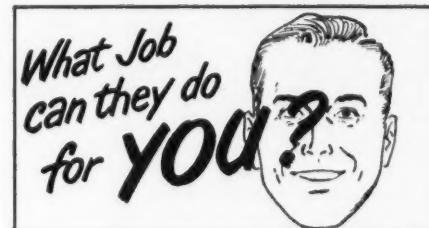
At present, manufacturer is applying the siliconized coating with laboratory equipment which imposes limitations on the sizes of items coated. As larger equipment is placed in service, scope of processing will be expanded.

Presently it is recommended that all forming, fabricating, and assembly be finished before siliconizing — including even simple bending or coiling. Fabricated molybdenum parts can be ordered from manufacturer, or parts may be fabricated by users and then returned for coating. Assemblies containing foreign metal, as indicated before, cannot be siliconized.

Rods, bars, and wire with siliconized coatings are available
(Continued on next page)



These problems were solved by
PITTSBURGH Activated Carbons



Literally scores of industrial adsorption jobs are now being solved more efficiently and economically by the use of superior grade Pittsburgh Activated Granular Carbons. You'll find their remarkable selectivity at work in every type of job from purifying

air and decolorizing sugar to recovering gold and dry cleaning solvents.

Pittsburgh Activated Granular Carbons are readily regenerated and are produced in sizes from 4 to 30 mesh to meet most adsorption requirements.

If your production calls for purification, filtration, recovery or refining of a liquid or gas, chances are these highly versatile, coal-derived Pittsburgh Activated Carbons can do the job for you faster, better and at lower cost.

Right now, the multiplying demands for Pittsburgh Activated Carbons—including those of vital defense production—exceed our capacity. But we're ready to help you plan the engineering aspects of their future application in your plant . . . and to supply you with technical data and samples.

W & D 3635G

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When inquiring check CP 5860 on handy form, pgs. 2-3

(Continued from preceding page)

in lengths up to 30". Longer lengths of wire can be coated when wound into coils; however, the total length of the coil should not exceed 30".

Tubing in diameters up to 2" and lengths up to 30" can be coated both inside and out. Small diameter tubing with closed ends (such as thermocouple wells) has not yet been successfully coated inside.

Cylinders, flats, and shapes with a maximum cross section dimension of 6" and a length of 8" can be processed.

Source: Inquiries about siliconized molybdenum should be accompanied by a print or sketch showing all significant dimensions, the maximum expected temperature of the metal, and the nature of surrounding atmosphere. Fansteel Metallurgical Corporation, Dept. CP, North Chicago, Ill. . . or for more information check CP 5861 on handy form, pages 2 and 3.

Stops petroleum products from rusting metals . . .

inherent polar activity of preventive causes oils and waxes to preferentially displace water on metal

Uses: Imparts rust preventive properties to petroleum oils, petrolatums, and waxes. Recommended by manufacturer for 4 specific types of service: 1) Government specification preservative oils and compounds; 2) industrial preservative or "slushing" oils; 3) oils used for lubricants for small motors, hinges, tools, tools, appliances, etc.; and 4) water displacement fluids which selectively "wet" metal surfaces, leaving a thin oily film for rust prevention and fingerprint suppression.

Features: Inherent polar activity causes oils and waxes to displace water preferentially from metal surfaces, and prevents redeposition of aqueous vapors or liquids on the metal surface. Maker reports that the physical-chemical mechanism which displaces and repels water provides protection against the most common causes of rusting.

Description: Typical physical properties of Petrobase 210 synthetic rust preventive composition are:

Color	red-brown
Specific gravity, 60/60°F	0.96-0.97
Pounds per gallon, 60°F	8.0
Viscosity, SSU @ 100°F	approx 3000
" " 210°F	100-125
Flash point, COC, °F	390
Pour point, ASTM, °F	25
Neutralization number	1.0-1.5

Source: Development of the Pennsylvania Refining Company, Dept. CP, Butler, Pa. . . or for more information check CP 5862 on handy form, pages 2 and 3.

Tank cleaned in 10 hours instead of 2 weeks . . .

chemical cleaning requires 1/9 the man-hours of mechanical cleaning, is easier, more thorough

Problem: In almost all plants where it is necessary to mix sizes, coatings and paints for process applications, the situation arises where a tank has dried out, leaving the residues of the last batch inside as a very stubborn coating that is hard to remove. It is then necessary to chip this hard material off the walls of the tank with chisels, hammers, scrapers, etc., a procedure which uses up a lot of man-hours and is not considered an easy job for the men doing it.

Take the case of a nationally known window shade



FOR YOUR INFORMATION

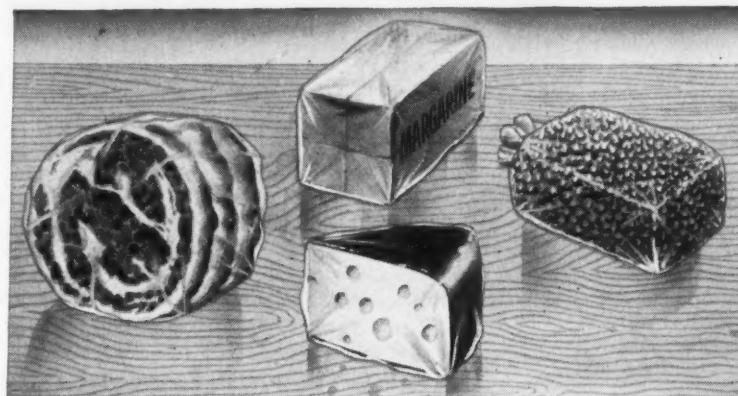
Every month Monsanto publishes these pages of pertinent information which may be useful to you. This issue discusses:

Plasticizers
Catalyst

Detergents
Wetting Agents

Further information will be furnished upon request.

Nontoxic plasticizers available to food packaging manufacturers



If you are manufacturing packages for foods, or if you have such products in the development stage, we suggest you investigate three Monsanto nontoxic plasticizers.

Santicizer* 141 (alkyl aryl phosphate), Santicizer B-16 (butyl phthalyl butyl glycolate) and Santicizer E-15 (ethyl phthalyl ethyl glycolate) all have been accepted as nontoxic plasticizers by the Bureau of Animal Industry of the United States Department of Agriculture.

While it will be necessary for you to get the bureau's approval on your nontoxic packaging materials, you can be sure that the

plasticizer in your formula will pass muster if you choose one of these Santicizers.

Many makers of packaging materials already are using Santicizers 141, B-16 and E-15. They are employed in coatings for milk cartons, in wrappings for margarine and containers for other foods. Employed in film for wrapping fresh meats, Santicizer 141 helps to prevent discoloration of the food.

For technical information and for assistance in perfecting your formulations, contact the nearest Monsanto Sales Office or mail the coupon.

Ortho-Nitrobiphenyl . . .

low-priced plasticizer that's efficient . . . and available

If costs and availability of plasticizers are headaches in your business, we suggest you investigate Monsanto's ortho-nitrobiphenyl today. ONB is efficient as a primary plasticizer or as an extender, and it is immediately available in any quantities you need. It sells for only 14½ cents a pound in truckloads or carlots.

Ortho-nitrobiphenyl (also known as ortho-nitrodiphenyl) is compatible with cellulose esters and ethers, polyvinyl chloride, polyvinyl butyral, polyvinyl acetate, styrene, rosins and rosin esters, modified phenolic resins, oil-soluble alkyd resins and vegetable oils. This wide compatibility, plus its low hydrolysis rate and low price, makes ONB an unusually attractive plasticizer.

Most resins, both natural and synthetic, can be plasticized with ONB. The amount of required plasticizer varies with the resins and the use of the finished product. The volatility of ortho-nitrobiphenyl is less than diethyl phthalate and greater than dibutyl phthalate.

Ortho-nitrobiphenyl is readily soluble in carbon tetrachloride, mineral spirits, pine oil, turpentine, benzene, acetone, glacial acetic acid and perchlorethylene. It is a good solvent.

For technical information on ortho-nitrobiphenyl, contact the nearest Monsanto Sales Office or mail the coupon for a copy of Monsanto Technical Bulletin No. OD-102.

Santicizer 8 eases shortage of plasticizers

Available in a day of shortages, Monsanto Santicizer 8 offers a solution to many a plastic manufacturer's problem. It imparts desirable characteristics to both plastics and coatings.

Santicizer 8, a light-yellow, viscous liquid, is readily soluble in all common organic solvents except petroleum hydrocarbons. It is only very slightly soluble in petroleum hydrocarbons. It is a valuable plasticizer for products required to withstand gasoline, greases and related products.

Santicizer 8 is an excellent plasticizer for cellulose acetate. It gives this plastic better brilliance and polish than any other plasticizer. It has light stability to meet the requirements of most molding compositions and imparts high tensile strength, elongation and flexibility to cellulose acetate sheets and films.

When plasticized with Santicizer 8, nitrocellulose lacquers have excellent flexibility, moisture resistance and adhesion. Combined with Santolite* MHP, Santicizer 8 is excellent for the manufacture of lacquers resistant to aliphatic hydrocarbons.

In shellac, Santicizer 8 greatly increases flexibility and has a softening effect, but does not impair adhesion.

Stable adhesives with good adhesion and flexibility are produced by Santicizer 8 in polyvinyl acetate.

Santicizer 8 is highly compatible with proteins and compatible to at least 50% in zein and casein coatings. It improves flexibility, water resistance, gloss and adhesion. It is one of the best plasticizers known for synthetic polyamides such as nylon. It lowers the melting point and aids in processing, improving flexibility and toughness without adverse effects on other properties.

For data and information on assistance in formulating, contact the nearest Monsanto Sales Office or mail the coupon.

• • • • •

MAIL COUPON for Technical Bulletin O-70, "Monsanto Plasticizers in Polyvinyl Chloride Film and Sheeting."

SANTOMERSE No. 1... all-purpose detergent and wetting agent



STEROX CD, one of the family of Monsanto Detergents, is useful in controlling dusting and sudsing.

Efficient, economical Monsanto Steroxes made for industrial uses

Monsanto's quintet of Steroxes, designed primarily for industrial applications, are efficient and economical to use in processes requiring lowered surface tension, wetting out, emulsifying or cleaning. All Steroxes are nonionic liquids. Sterox* SE and SK are 100% active. Sterox 5 and 6 are the same as SE and SK, respectively, except that they are 85% active. Sterox CD is 100% active and especially useful in controlling dusting in dry compounded detergents. Because of its controlled sudsing properties, Sterox CD is the answer to the need for a surface-active detergent in cleaning compounds where excessive sudsing cannot be tolerated.

Mail the coupon for: Bulletin P-129 (Sterox CD); Bulletin P-133 (Sterox SE and SK); Bulletin P-136 (Sterox 5 and 6).

Quick delivery of toluenesulfonic acid

If you use toluenesulfonic acid, or if your research can discover uses for the product, you can depend upon Monsanto to make prompt shipment of quantities you need.

Toluenesulfonic Acid, Technical

Formula: $\text{CH}_3\text{C}_6\text{H}_4\text{SO}_3\text{H}$

Molecular Weight: 172.20



Standard Form: Liquid or semicrystalline solid.

Specifications: Viscous liquid or semicrystalline solid with a greenish-to-black color; toluenesulfonic acid 94.0% min.; H_2SO_4 1.0% max.; water 2.0% max.; toluene 0.2% max.

General Information — Properties: A mixture of approx. 80% para isomer and 20% ortho isomer.

Uses: In the manufacture of dyestuff intermediates and as a catalyst in certain organic reactions.

For prices, contact the nearest Monsanto Sales Office or mail the coupon.

Serves in many industrial processes

Numerous textile mills, metal-working industries and others requiring a surface-active agent for wetting, spreading, penetrating, emulsifying or cleaning find Santomerse* No. 1 an efficient employee. Cleaning compounds purchased by many concerns have Santomerse No. 1 as an important ingredient.

Santomerse No. 1, an anionic detergent, has a minimum of 40% active alkyl aryl sulfonate, the remainder being principally inorganic builders. This has been found to be the best combination for efficiency and economy.

Santomerse No. 1 is effective in hard or soft water, in alkaline or acid solutions, in hot or cold operations. Santomerse No. 1 can be used in operations where the pH is critical because it assumes the pH of the solution in which it is used.

Among the many applications of Santomerse No. 1 are the following which may suggest uses in your business:

AGRICULTURAL SPRAYS

Used as a wetting and dispersing agent, Santomerse No. 1 increases the effectiveness of the spray.

DEHAIRING HOGS

Santomerse No. 1 in the scalding vat speeds up the removal of hair and scurf.

DAIRY CLEANERS

Santomerse No. 1 adds to the efficiency of acid, neutral and alkaline cleaners.

RAILROAD CAR CLEANERS

Santomerse No. 1 improves the detergency of acid-type cleaners to remove scale and road grime.

METAL INDUSTRY

Santomerse No. 1 in the acid bath for cleaning, treating or pickling metal improves operations and the quality of the work.

If your industrial processes require a detergent or wetting agent, investigate Santomerse No. 1. Contact the nearest Monsanto Sales Office or mail the coupon for a copy of the booklet, "Santomerse No. 1, all-purpose wetting agent and detergent."

HURRY! HURRY! HURRY!

Unload tank cars, carboys and returnable drums promptly and send them back to your chemical supplier. Containers are short. They're urgently needed. Your help will be appreciated sincerely.



PROPERLY STABILIZED vinyl plastics, using HB-40 as an extender plasticizer, have good light and heat stability.

Bright colors in vinyls are now possible with Monsanto HB-40

Monsanto HB-40 (partially hydrogenated terphenyl) is an excellent low-cost plasticizer that is practically water-white. It may be used in clear and tinted vinyl plastics without detracting from shades or transparency.

HB-40 is relatively nontoxic . . . strong in moisture resistance . . . is nonmigratory. It has excellent electrical characteristics. HB-40 gives a "dry hand" and increased tensile strength.

Technical data will be sent promptly in response to your request by coupon or to the nearest Monsanto Sales Office.

• • • • •

MONSANTO CHEMICAL COMPANY, 1700 South Second Street, St. Louis 4, Missouri. District Sales Offices: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

*Reg. U. S. Pat. Off.



SERVING INDUSTRY...WHICH SERVES MANKIND

SEND INFORMATION:
 HB-40. Nontoxic Santicizers.
 Santicizer 8. Toluenesulfonic Acid.

SEND LITERATURE:
 Bulletin O-70 (Polyvinyl Chloride Plasticizers).
 Booklet, "Santomerse No. 1."
 Bulletin OD-102 (Ortho-Nitrobiphenyl).
 Bulletin P-129 (Sterox CD).
 Bulletin P-133 (Sterox SE and SK).
 Bulletin P-136 (Sterox 5 and 6).

MONSANTO CHEMICAL COMPANY
1700 South Second Street, St. Louis 4, Missouri

Please send, without cost or obligation, information or literature as indicated at the left.

Name.....Title.....

Company.....

Street.....

City.....Zone.....State.....

When inquiring check CP 5863 on handy form, pgs. 2-3

MATERIALS

manufacturer. Using the procedure mentioned above, he lost the use of a tank for two weeks during cleaning. Usually, the cleaning operation required 90 man-hours. Two men worked at it full time, working alternately inside the tank, and one man put part time on the job.

Even so, cleaning was not thorough. In spite of gloves, the workers suffered cuts and abrasions to hands and arms. Then too, personnel in areas close to the tank had severe reactions from fumes released as paint was removed from the tank walls.

Solution: Instead of mechanical cleaning, this manufacturer now boils out the tank with a solution of Magnus 61XX, an alkaline stripping agent with added wetting and penetrating action. The solution is heated to 200-212°F in the tank and agitated overnight (about 10 hours). Then, tank is drained and flushed out with cold water for about 15 minutes. Where coating is very thick, it is sometimes necessary to use a second overnight treatment.

Results: Tank is again available for use within 24 hours from the time cleaning is started. Total man-hours required are 10. Cleaning is complete; tank is stripped down to the metal. A hand scraper is used on the top only. Injury to employees has been ended and fumes have been eliminated.

Source: Magnus 61XX is made by Magnus Chemical Company, Inc., Dept. CP, South Ave., Garwood, N. J. . . or for more information check CP 5864 on handy form, pages 2 and 3.

Holding oils, gasoline at 300°F function of gasket material . . .

physical properties cover all those for laminated plastics down through paper boards

Uses: Gasket material for use with oils, water, and gasoline at temperatures below 300°F.

Features: Physical properties are said to cover the properties from laminated phenolics down through vulcanized fiber to paper boards.

Description: Duriod 3102 is an asbestos-neoprene material with a water absorption rate of 15% in 24 hours and a bursting strength of 500 psi. Good gasoline and oil resistance supplement good flexibility. It is supplied in thicknesses ranging from 0.031 to 0.125", in fabricated form.

Source: Samples and typical test values of this gasket material are available from Rogers Corporation, Dept. CP, Manchester, Conn. . . or for more information check CP 5865 on handy form, pages 2 and 3.

Industrial preparation for atomic attack outlined

Booklet deals with industrial plant security in event of atomic war. It presents, in simple language, latest factual information about the atomic bomb, its destructive potential, and limitations. A guide to setting up defense organizations is offered as well as recommendations for strengthening structures and maintaining production. Other topics include first aid, fire fighting, police, salvage and repair. The publication has been reviewed by the AEC and other groups. "How to Prepare Your Plant for Atomic Attack" is issued by Dept. A, Walter Kidde & Company, Inc., Dept. CP, 675 Main Street, Belleville 9, N. J. When inquiring specify CP 5866 on handy form, pages 2 and 3.

Need a lower cost solvent
with proven performance?

INVESTIGATE

CELANESE* SOLVENT 601

Celanese Solvent 601 is available in increased volume.

It is the lowest cost solvent in its class. It offers improved quality and substantial savings in the production of varnishes, lacquers and other nitrocellulose compositions.

Celanese Solvent 601 has been extensively used in formulation to replace methyl ethyl ketone, ethyl acetate, isopropyl acetate, and similar compounds.

If you would like to evaluate Solvent 601, in your own products, write for sample quantity.

Celanese Corporation of America, Chemical Division,
Dept. 505-H, 180 Madison Avenue, New York 16, N. Y.

Celanese
CHEMICALS

*Reg. U.S. Pat. Off.

ACETIC ACID • ACETALDEHYDE • FORMALDEHYDE • PARAFORMALDEHYDE • ACETONE • BUTYL ALCOHOLS • METHANOL
NORMAL PROPANOL • BUTYLENE GLYCOLS • DIPROPYLENE GLYCOL • PROPYLENE GLYCOL • PROPYLENE OXIDE • TRICRESYL PHOSPHATES

When inquiring check CP 5867 on handy form, pgs. 2-3

MATERIALS

**Locks vinyl top coats to
metal surfaces having
adherent rust . . .**

primer compatible with other finishes; actually transforms rust particles from iron oxide to iron

Uses: Primer is recommended for all metal surfaces from which loose rust has been removed by wirebrushing and wiping. Not recommended for new shiny steel or steel with mill scale on its surface.

For use with polyvinyl chloride top coats, a tie-coat containing hydroxyl resins is required. For use with "B" Resin and other top finishes, no tie-coat is necessary.

Features: Capable of locking paint film — particularly vinyls — to surfaces having adherent rust. Surface wetting action is visible upon close microscopic inspection and becomes evident by its ability to reduce the splitting of top vinyl finishes (known for peeling from sharp edges) to nearly zero. Splitting of vinyl paint films on the edges of thin steel panels is reduced from a normal 80% to 4% maximum in an atmosphere which corrosively penetrates the thin top finishes on sharp corners.

Primer actually shows evidence (upon visual inspection sixty days after application on rusty surfaces) of reducing portions of the rust particles from iron oxide to iron. This action is believed responsible in part for the excellent bond obtained since the primer performs noticeably better on rusty surfaces than on clean, shiny metal.

Description: A vehicle that actually wets rust makes this primer different from conventional types. Known as CarboLine Rustbond Primer, it also contains two well known rust inhibitors — red lead and iron oxide. These are mixed with a chromate pigment and blended with the distinctive vehicle.

Source: Product of the CarboLine Company, Dept. CP, 7603 Forsyth Blvd., St. Louis 5, Mo. . . . or for more information check CP 5868 on handy form, pages 2 and 3.



**Development of "cold" latex
to lessen dependence on
natural product . . .**

seven varieties now available in limited quantities for wide range of applications

Development of a "cold" synthetic rubber latex approaching natural rubber latex in service and wearing qualities is a major step toward complete independence from supplies furnished by the Far East.

Lack of supply of such a high quality synthetic has been a bottleneck since commercial production began 10 years ago.

The recently developed cold varieties are the first of the GR-S or general purpose type, which promise to compete with natural rubber latex in large volume applications in the rubber industry.

Seven varieties of cold rubber latex have been developed. More will undoubtedly be possible. This means that synthetic latex can be tailor-made to specific applications.

For example, one variety of "cold" latex can be used as a 100% replacement for the natural product in making foam rubber. Others show promise as replacements for natural latex in manufacture of tires containing rayon tire cord, in

U.S.I. CHEMICAL NEWS

August ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1951

ATTENTION

Users of Taxfree and Specially Denatured Alcohol

Now is the time for users of specially denatured alcohol to renew their basic permit (Treasury Department Form 1479) for 1952. It is also time for users of Taxfree alcohol to complete and file with the District Supervisor—Alcohol Tax Unit—their application (Form 1450) for renewal of their Taxfree Alcohol permit for 1952. If you require forms or any assistance in their preparation, please call your nearest U.S.I. office.

Methionine Enhances Effect Of Antibiotics in Animal Feed

Improves Both Growth and Feed Efficiency

Data are now available from an Eastern university's recent tests on the relative growth responses obtained when DL-methionine, an antibiotic and fish meal are added in various combinations to a corn-soybean ration. Each test group was composed of twenty New Hampshire chicks of mixed sex.

Growth Response of Chicks as Influenced by Supplements to Corn-Soybean Meal Ration

Group	Supplement	Av. Wt. at 8 wks. gms.	Feed Efficiency
1	None	786	3.20
2	0.1% Methionine	831	2.96
3	10 ppm procaine penicillin	813	2.78
4	0.1% Methionine + 10 ppm procaine penicillin	908	2.88
5	5% Fish Meal	880	2.93
6	5% Fish Meal + 10 ppm procaine penicillin	883	2.94
7	5% Fish Meal + 0.1% Methionine	869	2.95
8	5% Fish Meal + 0.1% Methionine + 10 ppm procaine penicillin	902	2.82

These data show that addition of methionine to the corn-soybean ration improved both growth and feed efficiency (group 2). Addition of an antibiotic to this same type of ration also gave more favorable growth and feed efficiency figures (group 3). A combination of 0.1% methionine and 10 parts per million of procaine penicillin gave a growth response (group 4) equal to or greater than that obtained when 5% fish meal was added to the diet (group 5).

Test results showed that in some instances addition of antibiotics and DL-methionine alone can give results comparable to those obtained when any combination of fish meal, methionine, and antibiotics is added to a corn-soybean meal ration. This would seem to indicate that addition of an antibiotic to a corn-soybean ration containing methionine may permit the intestinal flora to synthesize any unknown growth factor present in fish meal.

As feed manufacturers depend to a greater extent on vegetable proteins in their

MORE

Pyrenone Grain Protectant To Help More American Farmers Save Their Stored Grain

Unique Insecticide Material, Introduced Last Year, Gives Full-Season Protection with One Application

U.S.I.'s 1951 program for Pyrenone Grain Protectant, introduced on a limited basis last year, will bring these unique materials to many more of America's farmers and grain handlers who are fighting costly insect damage to their stored

grain. Efforts will be especially concentrated in the South where, because of high temperatures favorable to insect breeding, infestation problems are most serious.

In 1950 Southern farmers lost nine per cent of their stored corn to insects each month by U.S.D.A. estimate. That means about an 80% loss over a nine-month storage period. Pyrenone Grain Protectant offers an entirely new way to beat insects — by preventing development of insects rather than killing an infestation after the grain is damaged. Applying



Applying Pyrenone Grain Protectant to shucked corn with a hand dust gun. No other equipment is needed — no masks, gloves, or special safety precautions.

it to grain at time of harvest means clean, top-quality grain when the time comes to sell it or feed it to livestock. One application is sufficient for an entire storage season.

Non-Toxic

The regulatory authorities concerned with foods and feeds recognize Pyrenone Grain Protectant as non-toxic to warm-blooded animals. Safe for use on grain for feeding to animals and also for milling into meal, flour, or other cereal products, Pyrenone Grain Protectant has no effect on taste or odor of finished products or on baked goods made from them. No special safety equipment is needed to apply the Protectant because it presents no added danger of explosion, fire, or poisonous fumes. Unlike fumigants, the Protectant works perfectly in open cribs.

Tests Highly Successful

At Greenwood Farms, Thomasville, Georgia, 800 bushels of hybrid seed corn (shelled) were treated in August, 1949. As late as June, 1951, this corn was in perfect condition. Other corn in a similar crib which had not been treated was removed after a few months, because it was very badly weevil-infested. On November 9, 1950, 50 bushels of shucked corn were treated at Thomasville and at the same time, fifty bushels of untreated corn were

MORE

August

U.S.I. CHEMICAL NEWS

★ 1951

CONTINUED

Methionine
in Feeds

formulations, feed grade methionine will play an increasingly more important role in producing high quality feed that will give satisfactory gains at low cost. U.S.I. is a major producer of feed grade methionine.

CONTINUED

Grain
Protectant

stored nearby. A check made on May 25, 1951 showed heavy infestation of Angoumois grain moth in the untreated corn, while the treated corn was completely free of insects. Similar results were obtained in tests on oats, barley, rough rice and brewers rice in different parts of the country where severe insect problems exist.

"Quart Jar Test"

Southern farmers, agricultural leaders, and



Regulatory officials concerned with foods and feeds recognize Pyrenone Grain Protectant as non-toxic to warm-blooded animals. Cattle have been fed corn treated with 4 times the normal amount of Pyrenone Grain Protectant with no noticeable effects.

farm dealers are being given an opportunity to prove to themselves the effectiveness of Pyrenone Grain Protectant on their own corn on their own premises. Special "Quart Jar Test" kits will be distributed to these groups. Announcement of the availability of the test kits will be made through advertising in farm magazines, agricultural leader publications, and a series of dealer-farmer meetings which are to be held throughout the insect-problem area.

'Artificial Muscle' Lifts
Over 100 Times Own Weight

An artificial muscle that is capable of doing work has been developed by a university zoologist. The muscle is said to be made up of actomyosin, a chemical material found in all muscles that may cause muscular contraction. The scientist extracted actomyosin from rabbit muscle. The muscle fibers were formed by compressing a film of the actomyosin which had been spread at an air-water interface. When treated with another muscle substance, the artificial muscle is claimed to have lifted over 100 times its own weight.

New Process to Produce
Citric Acid at Lower Cost

Much of the citric acid produced commercially is made by fermenting highly purified sugars with *Aspergillus Niger*, the black mold often found on spoiled foods. A new method has been found, involving use of methanol, to induce the mold to make citric acid from such cheaper materials as blackstrap molasses, ground corn, or commercial starch — according to a bacteriologist's report. The methanol is poisonous to the mold, halting its growth and causing it to produce citric acid.

New S.P.I. Procedure For
Determining Volatility
Of Vinyl Plasticizers

The Society of the Plastics Industry recently released information on its new procedure for determining the loss of plasticizer from vinyl film by volatilization, without the effect of the usual variables such as contamination from the air, insufficient air circulation, and temperature variations within the oven. Procedure involves heating samples with activated carbon in a closed metal can at a temperature of 70°C for 24 hours.

TECHNICAL DEVELOPMENTS

Information about manufacturers of these items may be obtained by writing U.S.I.

For quality control calculations, a new desk calculator is said to give results faster than an automatic computer or slide rule. One simple mechanical operation reportedly completes as many as five separate mathematical steps in 2 seconds. Squares, sums of squares, and square roots are claimed to be performed simultaneously. (No. 709)

A new vegetable colloid 100% soluble in cold water is described as useful for thickening the water phase of any compound or mixture (synthetic latex for example). (No. 710)

Concentrated pigment dispersions in alcohol soluble grades of nitrocellulose are available as the pigment source for high gloss printing inks and other products where toughness of nitrocellulose and dilution with alcohol are needed. (No. 711)

"Pasting" metal parts together with a bond stronger than riveting is claimed possible with a new "rubber cement." It has been used for bonding brake linings to brake shoes and assembling gasoline tanks. (No. 712)

A new technique measures corrosion as it takes place, permitting faster, easier study of the entire surface area of a sample. Similar to television scanning, it reportedly can be used in studies of corrosion inhibitors, cathodic protection, stress corrosion, etc. (No. 713)

A new type of laboratory equipment for measuring pressures as high as 15,000 psi is expected to be valuable in basic studies of high-pressure synthesis. (No. 714)

Durable, attractive finishes similar to chromium plating can be produced without the use of copper, nickel, or chromium, it is claimed, by applying a new protective coating over various metal-finishing processes. (No. 715)

For fast, accurate determination of gallons-content of 55-gallon drums, a new nomograph is available. It eliminates charts or the need to make long computations. (No. 716)

A new rot-proofing agent for wood, textiles, is described as free flowing, powdered copper ammonium fluoride complex, soluble in water. Wood may be sprayed, soaked, brushed, or pressure impregnated; textiles, soaked or padded. (No. 717)

A new adhesive for rubber, vinyl, phenolics, textiles, leather, wood, paper, and metals is described as non-tacky, non-reactive, flexible and resistant to water, acids, alkalies, mineral and vegetable oils, and to oxidation and discoloration. (No. 718)

PRODUCTS OF U.S.I.

ALCOHOLS

Amyl Alcohol (Isomyl Alcohol)
Butanol (Normal-Butyl Alcohol)
Fusel Oil—Refined
Propanol (Normal-Propyl Alcohol)

Ethanol (Ethyl Alcohol)

Specially Denatured—all regular and anhydrous formulas

Completely Denatured—all regular and anhydrous formulas

Pure—190 Proof U.S.P.,

Absolute—200 Proof

Solox®—proprietary solvent—regular and anhydrous

ANTI-FREEZE

Super Pyro® Anti-Freeze

U.S.I. Permanent Anti-Freeze

ANSOLS

Ansol® M

Ansol® PR

ACETIC ESTERS

Amyl Acetate—Commercial and High Test

Butyl Acetate

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Diethyl Oxalate

PHTHALIC ESTERS

Diamyl Phthalate

Dibutyl Phthalate

Diethyl Phthalate

OTHER ESTERS

Diethyl®

Diethyl Carbonate

Ethyl Chloroformate

INTERMEDIATES

Acetoacetanilide

Acetoacet-ortho-chloroanilide

Acetoacet-ortho-toluidide

Acetoacet-para-chloroanilide

Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Sodium Oxalacetate

ETHERS

Ethyl Ether, U.S.P.

Ethyl Ether, Absolute—A.C.S.

ACETONE — A.C.S.

Curby B-G®

D,L-Methionine

Riboflavin Concentrates

Special Liquid Curby®

U.S.I. Vitamin B₁₂ and

Antibiotic Feed Supplements

Vacatone® 40

RESINS (Synthetic and Natural)

Archem®—modified types

Arofene®—pure phenolics

Aroflat®—for special flat finishes

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Aroplaz®—alkyds and allied materials
Congo Gums—raw, fused and esterified
Ester Gums—all types
Natural Resins—all standard grades

INSECTICIDE MATERIALS

CPC Concentrates: Liquid & Dust

Piperonyl Butoxide

Piperonyl Cyclone

Pyrenone® Concentrates: Liquid & Dust

Pyrethrum Products: Liquid & Dust

Rotenone Products: Liquid & Dust

INSECTIFUGE MATERIALS

Indalone®

Triple-Mix Repellents

OTHER PRODUCTS

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PIB®—Liquid Insulation

Urethan, U.S.P.

Special Chemicals

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U.S.I. INDUSTRIAL CHEMICALS, INC.

60 EAST 42ND ST., NEW YORK 17, N.Y.



BRANCHES IN ALL PRINCIPAL CITIES

MATERIALS

several dipping processes, in the manufacture of sheet packing materials and brake linings.

"Cold" synthetic rubber latex was developed by a team of research scientists at the Naugatuck, Conn., synthetic rubber plant operated by Naugatuck Chemical for the Reconstruction Finance Corporation. It is the result of more than five years of research and two years of experimental pilot plant production and product evaluation.

(Summarized from news furnished by United States Rubber Company, Dept. CP, Rockefeller Center, New York 20, N. Y.)

Announces solvent that has 'no' flash point . . .

66-2/3 of total volume of a sample must evaporate before residue will flash

Uses: Solvent is recommended for use by those who employ carbon tetrachloride for cleaning, degreasing, extracting, etc. Generally used at room temperature, it can be used at elevated temperatures. Not intended to be used for vapor degreasing.

Features: Termed a 'no-flash point' solvent — samples will not flash until 66-2/3% of the total volume has evaporated. Adjustments can be made to render it non-flammable up to 100%.

Description: "Tetraene No Flash" is heavier than most petroleum solvents (about 8.75 lb/gal), but its drying time is considerably faster, being on the order of perchlorethylene. It is water-white and has a sweet, pleasant odor. Tolerating considerable contamination, it can be filtered for re-use. It is harmless to metals and textiles, and tests indicate it will not affect dyes of acetate rayons. Speed of solvency is good, and the residue may be considered as nil. Vapors are less toxic than those of carbon tetrachloride, trichlorethylene, or perchlorethylene.

TETRAENE NO FLASH SOLVENT

Specific gravity, 20/4	1.05
Viscosity, centipoises @ 20°C	1.5
Boiling range, °F	170-355
Acid as HCl	nil
Freezing point, °F	-10

Source: Development of the Colonial Alloys Company, Dept. CP, Philadelphia 29, Pa. . . or for more information check CP 5869 on handy form, pages 2 and 3.

For more information on product at right, specify CP 5870
see information request blank between pages 2-3.

For more information on product at left, specify CP 5871
see information request blank between pages 2-3.



**In the Nation's Fight Against Insects and Weeds
Antara Surfactants are in there pitching
...and Antara Technical
Service is backing them up!**



ANTARA® SURFACTANTS

Emulsifiers • Dispersants • Wetting Agents

**Increase the effectiveness of
insecticides and weed killers**

Antara Surfactants provide the emulsifying, dispersing or wetting characteristics needed for the effective use of the full lethal properties of insecticides and weed killers. There's an Antara Surfactant for practically every insecticide and weed killing problem.

Antara Surfactants insure a homogeneous, stable concentrate with good storage and packaging properties, able to resist the effects of temperature and weather. And, what is more important, they insure insecticides and herbicides that work faster, harder and longer.

HERE ARE A FEW ANTARA SURFACTANTS:

Antaron L622 — 2,4-D amine salts are subject to precipitation in hard water, clogging spray nozzles. With Antaron L622, precipitation is prevented even on dilution with water containing as high as 1000 ppm hardness. Field tests confirm that Antaron L622 is superior to products currently offered.

Antaron N185 — the most versatile of our wetting agents for use in wettable powder formulations. Gives excellent performance with potassium

cyanate for crab grass control, with maximum effectiveness and minimum turf damage. Antaron N185 has also been used with great success in 50%, 75% and 90% DDT wettable powders.

Antarox B201 — the best of our emulsifiers for stable dispersions or emulsions of 2,4-D esters, chlordane, toxaphene, lindane, CPR, parathion, or para-tolyl benzoate in hard or soft water. A close approach to the long-sought, all purpose emulsifier.

Antarox A400 — forms stable dispersions or emulsions with 2,4-D acid, aldrin, dieldrin, lindane and dimethyl phthalate. Also recommended for quick-breaking emulsions of 2,4-D esters, chlordane and toxaphene.

Antarox A601 — a new nonionic emulsifier. This 100%-active liquid has been approved by U. S. Public Health Service for use in 25% DDT formulations indicated for government bid work.

If you seek to make your compounds more efficient, easier to sell and possibly less costly to make — write today for your copy of the new Antara booklet AP17. Kindly address your inquiry to Department CP-8.



Send for your copy
of this new manual

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IN CANADA: Chemical Developments of Canada Limited, Leaside, Toronto 17

MATERIALS

Moisture resistance explains alkyl molding compound's good electrical values . . .

third type alkyl by this maker — this one's in granular form and flame retardant

Uses: Alkyl molding compound for production of such civilian and military items as television, radio, and radar electronic components . . . automotive ignition system parts . . . electrical switches and instruments, etc. Workable on conventional compression molding equipment.

Features: Third type of alkyl molding compound by this maker — Plaskon alkyl 422 is offered in granular form and is a flame retardant compound with improved electrical properties. No shortage of this material is expected.

Description: Compound is listed as self-extinguishing under ASTM and UL flame resistance tests. It retains its electrical properties on exposure to high humidities and temperatures, and, even after extended periods of immersion in water, electrical values are quickly regained. Possesses fast rates of cure (molds about 4 times as fast as standard thermosetting plastics), and same arc resistance and dimensional stability as other alkyls.

Source: Plaskon alkyl 422 is a development of the Plaskon Division of the Libbey-Owens-Ford Glass Company, Dept. CP, Toledo, Ohio. . . or for more information check CP 5872 on handy form, pages 2 and 3.

Hi-temp porcelain enamels replacing critical materials . . .

on steel, reduce maintenance and permit utilization of lighter gauge or less critical metals

Continuing its investigation of defense work possibilities for the porcelain enamel industry, the Government Business Committee of the Porcelain Enamel Institute points out that the high degree of heat resistance of porcelain enamels especially formulated for such services should find many applications in the solution of heat-corrosion problems for defense products.

The Committee reports that several types of porcelain enamel coatings have been developed for use where continued exposure of metal parts to high temperature necessitates protection against corrosion. Some of these applications, in which porcelain enamel coatings have greatly lengthened service life, include exhaust pipes and mufflers of internal combustion engines, heat exchangers, furnace flues, and for other parts exposed to exhaust or other high temperature gases.

Porcelain enameled steel, in addition to reducing maintenance and helping conserve material, can cut initial costs by enabling reduced thickness or the replacement of more expensive metal.

For the most part, high temperature-resistant porcelain enamel coatings are manufactured from "strengthened" versions of the frit used in commercial enameling ground coats. Large amounts of refractory compounds are added, however, and a blend of two frits is used, so that, by varying the proportions, the firing temperature of the enamel can be varied. Suitable for low-carbon steels, stainless steels, and alloy steels such as Inconel, this type of coating generally matures at around

PROBLEM . . .

To make fast-drying lacquers that would use less solvents and reduce overall finishing costs and time.

SOLUTION . . .

Hot spray lacquers—based on a new balance of solvency and evaporation rates in the formulations. These lacquers when heated (between 132°—160°F.) are thin enough to spray, yet deposit thicker films of higher solids content.

Look What's Happened

RESULT . . .

Fast-drying, durable finishes that provide up to double the final film thickness with a single "pass" of the spray gun. Often, one coat of hot lacquer gives adequate coverage.

Many leading manufacturers of furniture and other wood and metal products are now using hot-spray lacquers. They find that hot lacquers give them all of cold lacquer's unique combination of properties—including fast-dry, ease of sanding and polishing, print resistance, and variety of finishing choices.

This development in nitrocellulose chemistry, in cooperation with the protective coatings industry, is typical of the way in which Hercules is seeking constantly to broaden the fields of application for its products. Other Hercules cellulose derivatives include cellulose acetate, ethyl cellulose, cellulose gum, and hydroxyethylcellulose. Hercules welcomes the opportunity of placing its long experience in cellulose chemistry at your disposal.

HERCULES POWDER COMPANY 940 Market St., Wilmington, Delaware

INCORPORATED
Sales Offices in Principal Cities

HERCULES

SYNTHETIC RESINS—CELLULOSE PRODUCTS—TERPENE CHEMICALS—ROSIN AND ROSIN DERIVATIVES—CHLORINATED PRODUCTS—OTHER CHEMICAL MATERIALS FOR INDUSTRY





When inquiring check CP 5873 on handy form, pgs. 2-3



Please Return Drums

While many Hercules products are at present in short supply, users can help themselves and the entire chemical industry by sending back promptly all returnable drums. Steel containers are in short supply, too.

One of our plants lost several days' production within a two-month period, simply because there weren't any drums available in which to pack and ship finished products.

Other companies are experiencing container shortages, too. Let's all of us return drums as quickly as possible, so that the flow of materials to industry will not be held up by this type of shortage that is so unnecessary.

Thank you for your cooperation.

New Surface-Active Agent

A new Hercules nonionic surface-active agent, B-48, is now available in commercial quantities. The new derivative is based on rosin and ethylene oxide, a polyoxyethylene ester of rosin. An amber colored viscous liquid, B-48 is completely soluble in water. It is an excellent detergent and emulsifying agent. B-48 is not affected by the presence of the heavy metal ions of hard water. The material is stable in both alkaline and acid media, and is compatible with anionic and cationic surface-active agents.

B-48 is recommended for low foaming alkaline formulations used in dish washing, bottle washing, metal cleaning, and automatic home laundry compounds. It is also recommended for use as an emulsifying agent in the preparation of emulsifiable concentrates and emulsions. Send for free testing sample.

Booklet on Adhesives

Just off the press is a brand new technical booklet entitled "Hercules Resins for Adhesives." Three broad adhesive types are covered and examples are cited in each category. In a general way, the examples mentioned in each category, rubber, cellulose, and water soluble, aid adhesive manufacturers in selecting the resin best suited for their specific requirements. The physical characteristics of Hercules resins in each of these classifications are fully described for film cohesion, surface tack, bond strength and any other useful properties. Additional examples are cited to provide adhesives formulators with an index to the wide variety of Hercules resins in a broad range of hardness types. Send for free copy of this new booklet.

GC51-3

MATERIALS

1600°F. Addition of refractory materials to the frit, it is reported, also increases the resistance of porcelain enamel to thermal shock. Submarine exhaust pipes are cited as an example of the rigorous high-temperature, thermal-shock conditions under which porcelain enamel coatings have been successfully used.

According to the PEI Government Business Committee, porcelain enamel coatings also have been developed which can be fired at temperatures as high as 1900°F. These coatings are used for protection of alloy steels, which can be fired at extremely high temperatures without danger of warpage, and have been used successfully on gas turbine combustion chambers.

The committee cautions that a porcelain enameler should be consulted on the design and fabrication of parts to be porcelain enameled, in order to assure satisfactory coating.

Quite often, slight variations in such factors as radii, variations in metal thickness due to overlapping design, and exposed cracks at joints can have considerable bearing on the effectiveness of the coating.

(Porcelain Enamel Institute, Dept. CP, 1010 Vermont Ave., N. W., Washington 5, D.C.)

Acetylene from partial oxidation of methane and oxygen . . .

requires appreciably less power than other electric processes; purity is high

Largest production of acetylene in the U. S. — other than from calcium carbide — is at the Texas City plant of Carbide and Carbon Chemicals Company. The method employed is a partial oxidation process involving the high temperature reaction of methane and oxygen. Produced is a gas mixture containing essentially acetylene, with smaller percentages of carbon dioxide, methyl acetylene, diacetylene, vinyl acetylene, and other residual gases.

Compared with all known electric processes for acetylene manufacture, partial oxidation requires appreciably less power per pound of acetylene made.

Especially outstanding in the Texas City installation is a purification unit which separates acetylene from the gas mixture and raises the acetylene to high purity.

(Summary of information received from Carbide and Carbon Chemicals Division of the Union Carbide and Carbon Corporation, Dept. CP, 30 East 42nd St., New York 17, N. Y.)

Report describes rinsibility test

Method for testing rinsibility of synthetic detergents recently outlined in connection with ASTM is now available in report form. Method will detect presence of synthetics even when mixed with sodium carbonate, sodium phosphates, CMC, and other detergent-aids. Report also deals with adsorption of synthetics on cotton and wool and can be applied to adsorption on metals, plastics, ceramics, glass, or painted surfaces. The method is described as one in which aqueous solutions of synthetic detergents can be titrated with surface active ions of opposite charge. Issued by Solvay Process Div., Allied Chemical & Dye Corporation, Dept. CP, 40 Rector St., New York, N. Y. When inquiring specify CP 5874 on handy form, pages 2 and 3.

HOOKER...

basic source for PULP and PAPER chemicals

More than 50 large U. S. pulp and paper producers specify Hooker Chemicals for their processing requirements, such as chlorination and bleaching of pulp, caustic extraction, and de-inking of paper scrap.

These heavy users of chemicals find that Hooker purity and shipment-to-shipment uniformity are valuable aids in processing and in controlling uniformity of the finished product.

Whatever *your* needs for chlorine, caustic soda, or their many derivatives, you will like the way Hooker works to ease your supply problems. As fast as stocks are ready, they are shipped to you on dependable schedules, carefully point-checked to insure delivery when promised.

Production of Hooker Chemicals is at an all-time peak, and facilities are being expanded to meet new demands as promptly as possible. For up-to-date delivery information, please keep in touch with your Hooker sales representative.

From the Salt of the Earth

HOOKER ELECTROCHEMICAL COMPANY

15 FORTY-SEVENTH ST., NIAGARA FALLS, N. Y.

NEW YORK, N. Y. • WILMINGTON, CALIF. • TACOMA, WASH.

CHLOROBENZENES • SODIUM BENZOATE • SULFUR CHLORIDES • CYCLOHEXANOL • MONOCHLOROACETIC ACID • PIPERIDINE • CUSTOM HYDROGENATIONS

When inquiring check CP 5875 on handy form, pgs. 2-3



LOADING LIQUID CHLORINE . . .
one of many careful operations
that preserve the high purity of
chlorine from the efficient Hooker
Type "S" Cells, at Niagara Falls
and Tacoma, to your plant.

MATERIALS

Conversion of butylene to butadiene was 70% — is now 92% . . .

catalyst requires only minor changes in present equipment; less gases of only fuel value produced

Uses: Catalyst dehydrogenates N-butylens to produce 1,3-butadiene required for synthetic rubber.

Features: Substantially increases synthetic rubber production from the same amount of raw materials now used — converting approximately 92% of butylene into butadiene as compared with about 70% conversion for catalysts now in use. Conversion of equipment in order to use the catalyst is reported to be a simple, inexpensive operation. Less gases having only fuel value are produced.

Description: Catalyst is a calcium-nickel phosphate. It increases throughput of the plant. About 10% increase can be obtained without plant changes. About 50% increase in butadiene production can be obtained by strengthening the grate supporting the catalyst beds in the dehydro unit and increasing the throughput. This increase in throughput can be made without increase in the butylene feed preparation plant since less butylene in the feed stock is required per unit of butadiene produced with this catalyst than with current catalysts. Increasing the grates supporting the catalyst beds in the reactors of the dehydro unit makes it possible to force greater amounts of feed stock and steam vapors through existing catalyst beds (at increased velocities, at 35% or more conversion per pass, and at 92% selectivity) without exceeding the safe loading on the supporting grates.

Existing waste heat boiler, steam quenching tower, and hydrocarbon gas vapor compression equipment are adequate since the catalyst produces considerably less non-condensable gas of fuel gas value than does the presently used catalyst. Butadiene purification plant must be increased to handle the increased production of butadiene.

Optimum benefits from the substitution of this catalyst for presently used ones are obtained, therefore, by rebalancing the size of the sequential plant equipment and operations.

Source: Catalyst is a product of the Dow Chemical Company, Dept. CP, Midland, Mich. . . or for more information check CP 5876 on handy form, pages 2 & 3.

Plasticizer also stabilizer for vinyl films . . .

should help out in lieu of short supply of cadmium and lead stabilizers

For the plastics, coating, textile, packaging and other industries which use vinyl films, and are harassed by tight supply of cadmium and lead stabilizers, the dual effectiveness of a low-viscosity polymeric resin as both a plasticizer and a stabilizer is believed to offer significant opportunities.

Laboratory testing by the Resinous Products Division of Rohm & Haas Co., fortified by actual field results, indicates that Paraplex G-60 exerts a definite stabilizing action in addition to its primary function as a plasticizer. Polyvinyl chloride films plasticized with this resin and containing no stabilizer whatever show surprisingly good stability — though the addition of some supplementary stabilizer is generally recommended. But, it has been demonstrated,



FOR
COMPLETE
LIST

of Hooker Chemicals, send for
Bulletin 100, which describes prop-
erties, typical uses, and shipping
containers. Please write on your
business letterhead.

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1-1120

the presence of G-60 as a plasticizer permits the quantity of stabilizer to be halved, even for the most rigorous conditions of processing and exposure. The stabilizing action of G-60 has been confirmed not only by accelerated laboratory tests, but also by actual Florida exposure studies.

The effectiveness of this resin as a plasticizer has been amply established. A typical PVC stock plasticized with 35% G-60 has, for example, a 100% modulus of 1860 psi. And the Shore "A" hardness test (10 seconds contact) yields an average value of 76. With this same stock, no extraction loss occurred in 1% soapy water after 24 hours' exposure at 60°C. After 60 hours at 93°C, extraction loss was still less than 3%, about one-fourth of the average loss for such films plasticized with dioctylphthalate. Extraction loss in mineral oil after 10 days at 25°C for the stock tested above was 4.2% of sample weight, and no loss was recorded after 10 days in tap water at 25°C.

Low volatility of the G-60 resin was demonstrated in tests using activated carbon. After 24 hours contact with activated carbon at 90°C, the same stock as above showed a loss of 0.3%.

A significant economy achieved by the stabilizing action of this resin is its "up-grading" of other plasticizers which, without its addition, are unacceptable from the standpoint of stability. As little as 10 to 20% of G-60, it is asserted, will accomplish this result with such plasticizers as phosphates, glycol derivatives, phthalates and amide types. Often, results indicate, this use will develop appreciable savings by permitting the utilization of low-cost plasticizers, even under stringent service requirements.

Heat stability of a polyvinyl chloride film with and without Paraplex G-60 added is expressed in the following table:

STABILIZATION EFFECT OF G-60 ON POLYVINYL CHLORIDE STOCK

Formulation	Parts	Parts	Parts
Geon 101	100	100	100
Paraplex G-60	0	0	50
Phosphate-type plasticizer	50	50	0
Stabilizer	1.5	4.0	1.5
Heat stability (hr)*	1/4	3/4-1 1/2	over 4

*Time required at 350°C to produce marked discoloration.

An added advantage also results because the Paraplex plasticizer is considerably lower in density than vinyl film, which is sold on the bases of square yardage and thickness. Thus, scarce supplies of vinyl chloride are stretched to the limit.

(Rohm & Haas Company, Resinous Products Division, Dept. CP, Washington Square, Philadelphia 5, Pa.)

Covers practical aspects of pigment dispersion

Twenty-one-page publication covers pigment dispersion in paints, enamels and lacquers. Discussion is comprehensive, dealing with vehicle and pigment structure by means of easily understood diagrams. Considerable data is given and text is profusely illustrated with halftones, drawings, and graphs. Tables are included at frequent intervals to give the actual data referred to by discussion. Topics treated include: nature of vehicle, nature of pigment, the dispersion process, dispersion properties of titanium dioxide pigment types, and intensive mixer operation. Technical Bulletin 903 is issued by Calco Chemical Div., American Cyanamid Company, Dept. CP, Bound Brook, N. J. When inquiring specify CP 5877 on handy form, pages 2 and 3.

ARMOUR Chemical Division

Fatty Acids
Long-Chain Fatty Acid Derivatives
Industrial Oils

Arneel Plasticizers Available for Prompt Shipment

Defense requirements have created shortages of many primary plasticizers. Fortunately, however, with the expanded facilities of their new plant, the Armour Chemical Division can offer Arneel Plasticizer for prompt shipment.

"Arneel" is the Armour trade-name for a series of 11 high molecular weight aliphatic nitriles having alkyl chain lengths of 8 to 18 carbon atoms. They are chemically stable nitrogen containing compounds represented by the general formula R-CN where R is a normal aliphatic group.

Arneel Plasticizer is being used as an extender and in many cases as a primary plasticizer particularly where low temperature flexibility is desired. The Arneels are excellent softening agents for several

synthetic rubbers and elastoprenes and synthetic rubber-like elastomers. Arneels are particularly efficient softeners for acrylonitrile copolymers, polyvinyl and polystyrene derivatives. For certain polymers, 25 to 50 per cent less plasticizer is required to obtain the desired characteristics. Furthermore, the efficiency experienced with Arneel softeners permits compounders to carry a high load of carbon black or other reinforcing agent and thus reduce materially the cost of the finished product.

The Arneels offered commercially as plasticizers are readily available and can be obtained in tank car quantities. For additional information, write for your free copy of the booklet "The Arneels as Plasticizers."

New Oleic Acids Improve Products

Low Temperature Solvent Crystallized Oleic Acids, introduced recently by the Armour Chemical Division, are already finding important applications because of their unique combination of properties. Not only does this process—exclusive with Armour—produce the highest quality and most uniform Red Oils and Oleic Acids available, but it uncovers many advantages not found in ordinary distilled or pressed products. It has lower saturated acid content, greater stability, and is ester-free and almost odorless.

In the manufacture of latex foam rubber, for instance, potassium oleate is used as a foam stabilizer. Here good odor is important in the soap product so that no clinging rancidity is present in the final product. Likewise, low unsaponifiable content is important if a uniform "blow" is to be obtained. Good mechanical and uniform chemical stability are also highly desirable if uniform jelation

is to be controlled. All of these properties are inherent in Armour's Low Temperature Solvent Crystallized products.

Recently, many foundries have turned to resin binders as a means of producing uniform sand cores. Here low-titer red oil dissolved in fuel oil or kerosene acts as a positive mold release from core boxes. Thus the time cycle of "loading" is reduced and rejections are consequently negligible. And, at the same time, mold build-up is greatly lessened.

The above are only two examples of where the superior qualities of Low Temperature Solvent Crystallized Oleic Acids have improved formulations. If you are dissatisfied with the products you are now using, or if you are looking for a safe and dependable source of supply for oils and fatty acids, it will pay you to investigate Armour's complete line of Oleic Acids and Red Oils. Specifications are listed in the chart below.

Product	Iodine Titer Min. Max. (8° - 11° Titer)	No. (Wij's) Min. Max.	Acid Value Min. Max.	Sap. Value Min. Max.	Unsapon- ifiable Value Min. Max.	Color Max.
Distilled Red Oil (8° - 11° Titer)	8°C 11°C 90 95	193 200	193 200	—	3%	6.4R-24Y (1" Lov.)
White Oleic Acid (8° - 11° Titer)	8°C 11°C 90 95	195 201	195 201	—	2%	1.5R-15Y (5 1/4" Lov.)
Distilled Red Oil (Low Titer)	— 5°C 90 95	193 200	193 200	—	3%	6.4R-24Y (1" Lov.)
White Oleic Acid (Low Titer)	— 5°C 90 95	195 201	195 201	—	2%	1.5R-15Y (5 1/4" Lov.)

All of these products are available for prompt shipment in 55-gallon drums or in aluminum tank cars. Write today for prices, samples and additional information.

When inquiring check CP 5878 on handy form, pgs. 2-3

Commercial Grades of Neatsfoot Oil Available for Prompt Shipment

In the processing of textiles and leather, neatsfoot oil plays an important role. It imparts a quality that no substitute cheaper oils can offer. For these industries, Armour Chemical Division produces several grades of neatsfoot oils—with the same degree of uniformity as lard oils. Here are the specifications of three of these oils:

Prime Neatsfoot Oil

F.F.A. 5% Max.
Pour Point 40-45°F
Color 3 NPA Max.

Ideal for use in knitting mills, this oil washes out readily and imparts a fine quality to the finished product.

Extra Neatsfoot Oil

F.F.A. 10% Max.
Pour Point 40-45°F
Color 4 1/2 NPA Max.

No. 1 Neatsfoot Oil

F.F.A. 15% Max.
Pour Point 45-50°F
Color 5 NPA Max.

Both of the above oils are widely used as leather preservatives and softeners—also for rough textile work.

Recommended Reading

Write for the authoritative booklet "The Handling, Sampling and Testing of Fatty Acids" covering: Shipping and storing fatty acids; process equipment; standard sampling methods and equipment; testing fatty acids; tests commonly used and their meanings. Available without charge.

Mail this Coupon

Please send additional information on

•

•

Name _____ Title _____

Firm _____

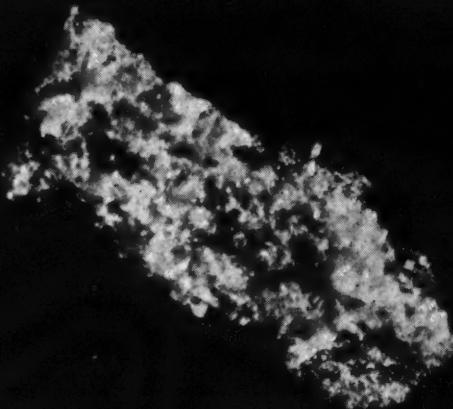
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ARMOUR Chemical Division

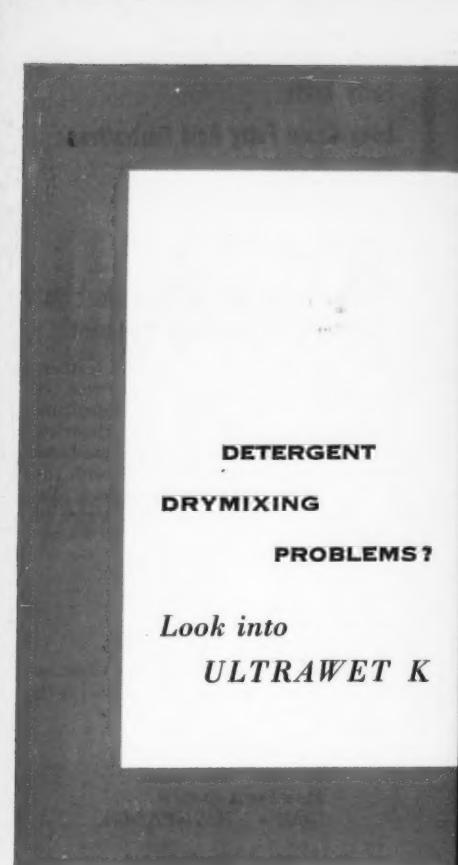
Armour and Company
1351 W. 31st St., Chicago 9, Ill.

Magnification of an ULTRAWET K flake.



**DETERGENT
DRYMIXING
PROBLEMS?**

*Look into
ULTRAWET K*



Want to get more flexibility and lower costs in your cleaning formulations? Then we have a hunch you will be interested in 85% active ULTRAWET K.

This alkyl aryl sulfonate has only 15% sodium sulfate which allows you freedom to select your own combination of builders and extenders. Costs can be pared too because ULTRAWET K's 85% active flake means a real saving when compared to less active flakes. Another plus for this concentrated synthetic detergent — it can be stored in a smaller space.

We'll be glad to send you a bulletin showing the effects of mixing equipment — and the effects of builders — on the densities of the final product. Write The Atlantic Refining Company, Chemical Products Section, Dept. C-1, 260 S. Broad Street, Philadelphia 1, Pa.

**SOME OF THE ATLANTIC PETROLEUM CHEMICALS
ARE CURRENTLY IN SHORT SUPPLY**

IN THE EAST AND MIDWEST

THE ATLANTIC REFINING COMPANY

Philadelphia • Pittsburgh • Providence • Charlotte • Chicago

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NAUGATUCK CHEMICALS . . . Division of Dominion Rubber Co., Ltd.
Elmira • Montreal • Toronto • Windsor • Winnipeg • Saskatoon • Calgary

Without obligation, please send me further information on ULTRAWET K.
(Dept. C-1)

Name _____

Company _____

Address _____



When inquiring check CP 5879 on handy form, pgs. 2-3

MATERIALS

Metal-working coolant-lubricant used at 1-3% concentration . . .

rust inhibiting emulsion increases tool life 50-400%, permits higher tool speeds

Uses: Metal-working coolant-lubricant for use in cutting, grinding, drawing and stamping of ferrous and non-ferrous metals and alloys. Has been found especially effective for cutting of very soft and very hard alloy steels, and is reported to have given satisfactory results where other cutting oils have failed.

Material is recommended for use in all types of metal-working machines which employ coolant recirculating systems properly sealed for handling water emulsions. It is being used with automatic chucking machines, hand screw machines, turret lathes, cylindrical and surface grinders, mechanical saws, drill presses and milling machines. Drawing and stamping jobs also are being done successfully by dipping the sheet in diluted material, according to reports.

Features: According to the manufacturer, the product is based on a unique family of chemical compounds which possess unusually good lubricating properties because of a high affinity for metals. It is used at a concentration of 1 to 3% which is said to be only 1/2 to 1/5 the concentration at which ordinary soluble cutting oil emulsions are used.

Other advantages mentioned are: smaller daily makeup additions, less frequent reservoir cleanout and recharging, tool life increased from 50 to 400%, higher tool speeds and increased output are possible, better finishes and fewer rejects, emulsions are transparent, product has rust inhibiting properties.

Description: Coolant-lubricant, called Emulsifier STH, was originally developed in Europe to overcome the wartime fat shortage, and has undergone 10 years of research and field testing both in Europe and the United States. Product is practically free of water when shipped and can be made up to its use-concentration with water of practically any hardness encountered in this country. It can be added directly to the required amount of water, with stirring. At times, it is advisable to prepare a preliminary emulsion concentrate for better control of concentration. This concentrate is used by the operator in preparing his working emulsions.

Maker recommends a 40% addition of a low viscosity, neutral blending oil for improvement of cold drawing and stamping performance. For example, one part of oil should be added to 2.5 parts of Emulsifier STH and then diluted with 97.5 parts of water.

In tests, it was found that emulsions containing 5% or less of Emulsifier STH are neither primary irritants nor sensitizers to skin.

Source: Product Development Department, General Aniline & Film Corporation, Dept. CP, 22 Center Sq., Easton, Pa. . . . or for more information check CP 5880 on handy form, pages 2 and 3.

Systematises information on vitamin B complex

"The Vitamin B Complex" is a survey that systematises the large mass of information presently available on this subject. It presents a clear picture of the chemical and biological behavior of each member of the vitamin B complex, and stresses the important function the group as a whole performs in living organisms.

Scope of the survey is perhaps best indicated by sectional

headings: aneurine (thiamine), riboflavin, nicotinic acid (niacin), pyridoxine (adermin, vitamin B₆), pantothenic acid, biotin, folic acid complex, vitamin B₁₂ (erythrotin), p-aminobenzoic acid, inositol, and choline. System of treatment for each section follows this approximate outline: isolation, chemical constitution, synthesis, properties, stability, biological and chemical estimation, occurrence, effects on life, and analogues.

Extensive author index is included in entirety of 688 pages. Remit \$9 direct to John Wiley & Sons, Inc., Dept. CP, 440 4th Ave., New York 16, N. Y. When inquiring specify CP 5881 on handy form, pages 2 and 3.

Lubricant shear strength measured at pressures to 250,000 psi . . .

Instrument will also aid determination of point at which film solids will break down

A recently developed instrument provides a method for accurately measuring effectiveness of ultra-thin lubricant films at pressures up to 250,000 psi between two metal bearing surfaces. In addition to its value in lubricant studies, it has potentialities for determining the point at which films of solids such as soap will break down and permit contact between two surfaces under extreme pressure.

The instrument also aids in measuring relation of temperature to final determination of shear strength of a film of grease or oil. In many cases, it was found, temperatures as high as 200 degrees above zero fail to alter basic shear strength properties.

Essentially the apparatus for measuring shear strength of lubricating film consists of a vertical and a horizontal steel cylinder. Each cylinder is a quarter-inch in diameter, oriented at right angles to the other. The horizontal one is maintained in a fixed position while the vertical one is capable of being rotated under pressure or for exertion of direct pressures up to 250,000 psi at the contact point.

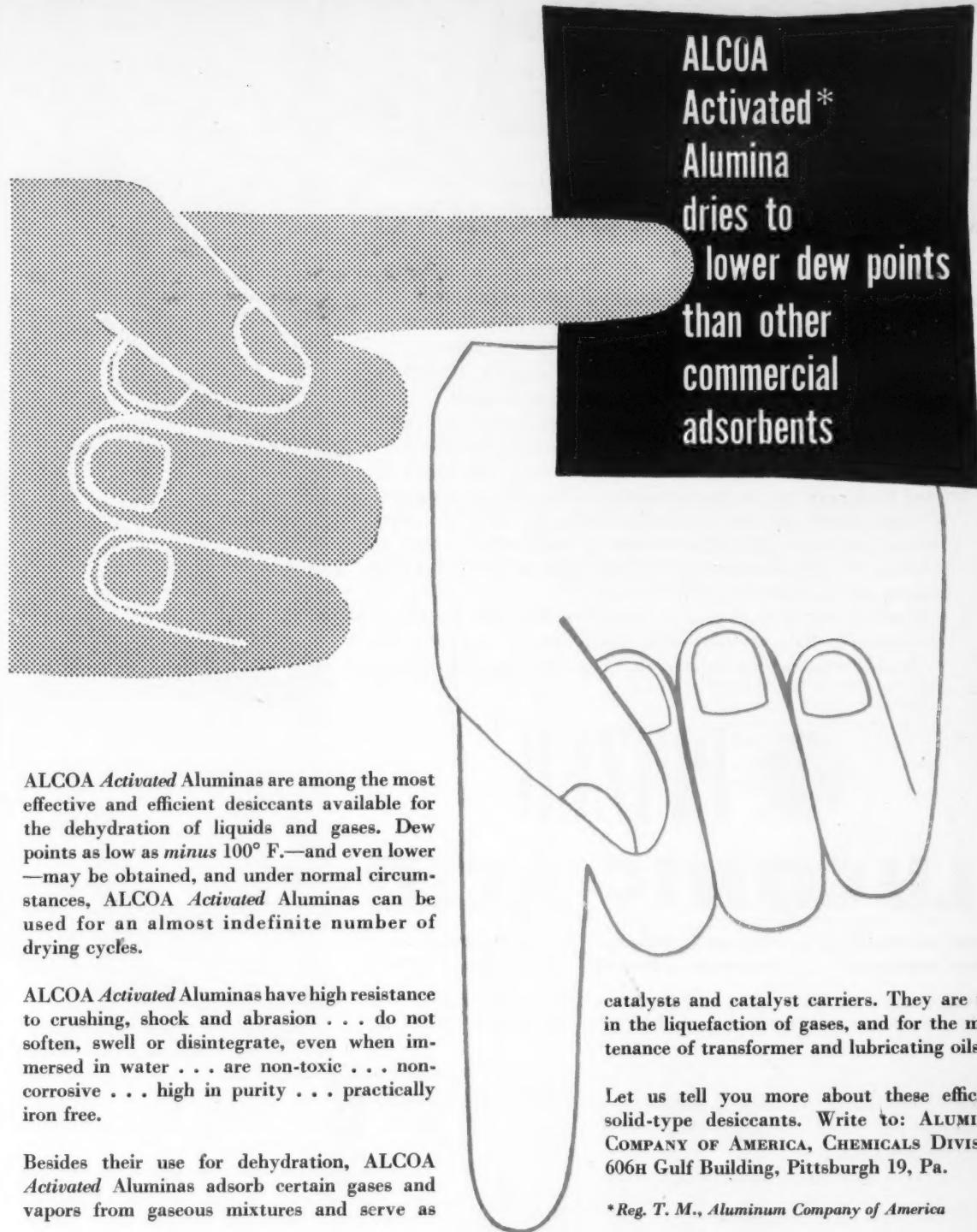
Gauges connected with the instrument provide readings on the force of the drive, extent of loading at the oil-filmed contact point, and the amount of torque present when the instrument is in operation.

Effectiveness of various lubricants under test is measured after each operation of the instrument by microscopic examination of wear on cylinders at their contact point, or the depth of pit created in the fixed cylinder after the upright cylinder has been rotated against it.

(Instrument developed by Socony-Vacuum Laboratories, Research and Development Department, Paulsboro, N. J.)

Tells of detergent uses of cellulose gum

Synthetic detergents and built tallow soaps allow some of the soil to be redeposited during the course of laundering. Cellulose gum is reported to lessen this tendency. Other useful properties are also pointed out in eight-page booklet. Considerable data are given on various formulations and 11 graphs illustrate typical results. Booklet CMC-CT is issued by Cellulose Products Dept., Hercules Powder Company, Incorporated, Dept. CP, Wilmington, Del. When inquiring specify CP 5882 on handy form, pages 2 and 3.



ALCOA Activated Aluminas are among the most effective and efficient desiccants available for the dehydration of liquids and gases. Dew points as low as *minus* 100° F.—and even lower—may be obtained, and under normal circumstances, ALCOA Activated Aluminas can be used for an almost indefinite number of drying cycles.

ALCOA Activated Aluminas have high resistance to crushing, shock and abrasion . . . do not soften, swell or disintegrate, even when immersed in water . . . are non-toxic . . . non-corrosive . . . high in purity . . . practically iron free.

Besides their use for dehydration, ALCOA Activated Aluminas adsorb certain gases and vapors from gaseous mixtures and serve as

catalysts and catalyst carriers. They are used in the liquefaction of gases, and for the maintenance of transformer and lubricating oils.

Let us tell you more about these efficient, solid-type desiccants. Write to: ALUMINUM COMPANY OF AMERICA, CHEMICALS DIVISION, 606H Gulf Building, Pittsburgh 19, Pa.

*Reg. T. M., Aluminum Company of America

Alcoa Chemicals



ALUMINAS and FLUORIDES

ACTIVATED ALUMINAS • CALCINED ALUMINAS • HYDRATED ALUMINAS • TABULAR ALUMINAS • LOW SODA ALUMINAS
ALUMINUM FLUORIDE • SODIUM FLUORIDE • SODIUM ACID FLUORIDE • FLUORIC ACID • CRYOLITE • GALLIUM

When inquiring check CP 5883 on handy form, pgs. 2-3

V
1
4
/
8

tests prove

Gluconic Acid

is the least corrosive!

The accompanying graphs show the relative corrosion rates of six of the most widely used mild acids when tested on Monel metal, stainless steel, copper, aluminum, zinc and mild steel. The metals were immersed in 1 N acid solutions for 4 hours at 212°F. In each case, gluconic acid was found to be *the least corrosive of all!*

Because of this mildness, gluconic acid is widely used in metal cleaning compounds. Being non-toxic, it is particularly effective in cleaning agents used by the food industry. And in brewing, it is finding increasing use in the prevention of beerstone formation.

Gluconic acid is also used as an acid catalyst for vat soluble ester printing pastes and acid colloid resins in the textile industry. In addition, it is an effective sequestering agent in textile printing, tanning and industrial water treatment.

Gluconic acid is marketed as an amber, 50% aqueous solution possessing a slight acetous odor. Specific gravity is 1.24 at 25°C.

Write Technical Service Dept. CP-1 for data, samples and prices.

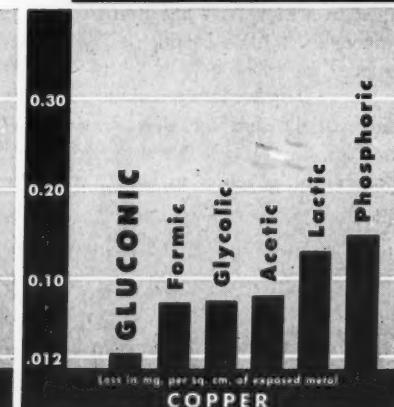
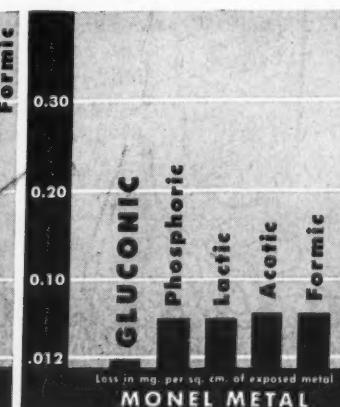
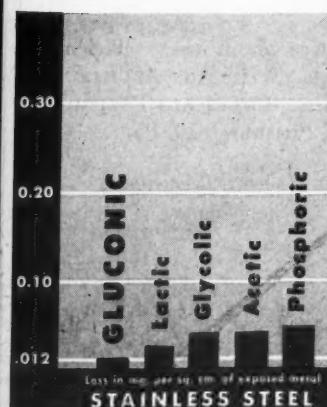


PFIZER

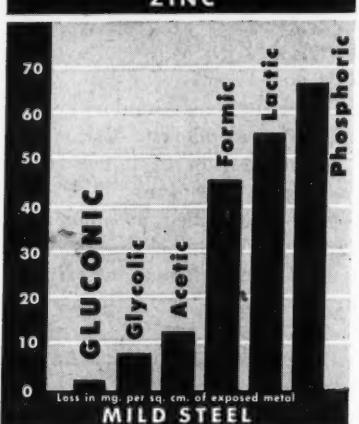
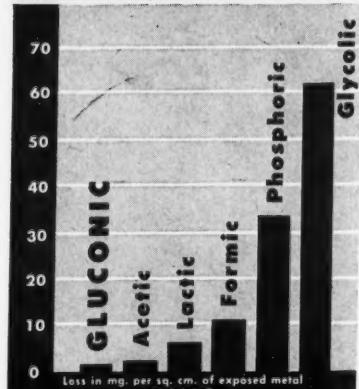
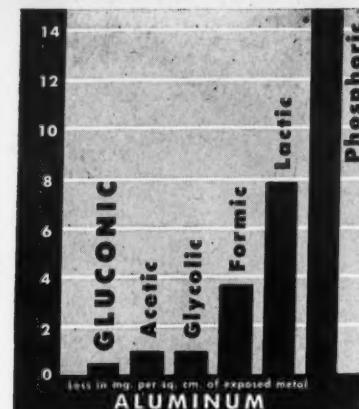
GLUCONIC ACID

AMMONIUM GLUCONATE • CALCIUM GLUCONATE • FERROUS GLUCONATE
MAGNESIUM GLUCONATE • POTASSIUM GLUCONATE • SODIUM GLUCONATE

CHAS. PFIZER & CO., INC. • 630 Flushing Avenue, Brooklyn 6, N. Y.
425 North Michigan Ave., Chicago 11, Ill. • 605 Third St., San Francisco 7, Calif.



When inquiring check CP 5884 on handy form, pgs. 2-3



MATERIALS

New solvent offered for evaluation . . .

expected to play role in resin-based coatings, rubber, inks, cleaning fluids; samples, quantities available

Uses: Applicable alone or in combination with other solvents. Suggested in the formulation of surface coatings made of resins, or in the preparation of solutions of organosols based on various synthetic resins. Suitable in formulations of paints, rubber, inks, solvent cleaning fluids, polishes and waxes, and wool degreasers.

Features: Available in quantity lots. Samples may be had for testing.

Description: "Soludiene" solvent is composed of approximately 65% paraffins, 20% naphthenes, and 15% aromatics. Average physical properties are tabulated below:

SOLUDIENE SOLVENT

Lb./Gal. @ 60°F	6.27
Relative Evaporation, C ₆ H ₆ = 1	0.26
ASTM Distillation °F, ASTM D86	
Initial BP	280
10%	285
30%	287
50%	290
70%	292
90%	295
End Point	320
Specific Gravity @ 60°F	0.753
API Gravity @ 60°F, ASTM D287	56.5
Flash Point, TCC, °F, ASTM D56	83
KB Value	35.0
Aniline Pt., °F, ASTM D611	137.0
Vapor Pressure, Reid, Lb., ASTM D323	0.53
Viscosity, Centistokes @ 77°F, ASTM D445	0.86

Source: Development of Technical Process Division of Colonial Alloys Company, Dept. CP, Ridge Ave. & Crawford St., Philadelphia 29, Pa. . . . or for more information check CP 5885 on handy form, pages 2 & 3.

Foaming, wetting agent — crude grade saponin . . .

free from chemical adulterants frequently used in processing and stabilizing saponins

Uses: Crude grade of saponin in powder form finds application as a foaming and wetting agent. May be combined with other saponins and certain synthetic wetting agents. Suitable for use where its water-insolubles will not interfere — building trade, etc.

Features: Free from chemical adulterants that are frequently used in processing and stabilizing saponins.

Description: "Fomagen" (saponin crude) contains less than 10% moisture, is better than 95% organic material, and contains natural organic impurities — mostly phosphates and iron. It is a pale yellowish-brown gritty powder, only partly soluble in alcohol or water. It foams readily when shaken with water; the foam is reported to be quite stable.

Source: Product of B. L. Lemke & Co., Inc., Dept. CP, Lodi, N. J. . . . or for more information check CP 5886 on handy form, pages 2 and 3.

Gaskets, packings specified

Thirty-two-page catalog lists extensive data on 95 packings and gaskets. Catalog P-100C is issued by Raybestos-Manhattan, Inc., Packing Div., Dept. CP, Manheim, Pa. When inquiring specify CP 5887 on handy form, pages 2 and 3.

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MATERIALS

**Dilute cleaner concentrate
for degree of cleaning
desired . . .**

odorless, leaves no oily film,
doesn't hurt painted surfaces

Uses: Cleaner can be applied to metal, concrete or painted surfaces by brushing or spraying after it is diluted with 4 to 9 parts Stoddard solvent or kerosene. Grease and dirt are carried away after rinsing with either hot or cold water.

Can be used without rinsing for wiping down production machines when diluted with 9 parts solvent.

Also recommended for cleaning parts by soaking in dip tanks or hydrowash machines. Here, it can be diluted with all proportions of water, and can be heated to 160°F for spray cleaning in process work.

Features: Completely odorless and leaves no oily film. Concentrated form. Doesn't harm painted surfaces.

Description: FO-106 Emulsion Cleaner is available in 5 and 55-gallon drums. It meets the requirements of Air Force Specification 20015E and Navy Specification C-147, Type I.

Source: Development of Fine Organics, Inc., Aviation-Industrial Chemicals Div., Dept. CP, 211 E. 19th St., New York 3, N. Y. . . or for more information check CP 5888 on handy form, pages 2 and 3.

Natural gas packaged in cylinders . . .

potential users are those who desire switch from manufactured gas

Uses: May be applied to existing processes where manufactured gas is being employed. Research laboratories and pilot plants will probably be most interested.

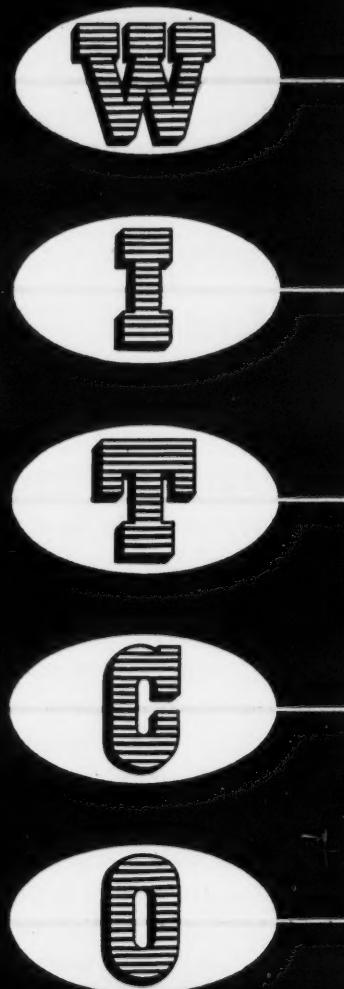
Features: Being supplied in cylinders for convenience.

Description: The Texas natural gas being supplied has a specific gravity of 0.6019 at 60°F and a heating value of 1036 Btu per cu ft at 60°F. Methane content averages 93%. Gas is packaged in steel cylinders at 1800 psi. Each holds about 200 cu ft.

Source: The Matheson Co., Inc., Dept. CP, East Rutherford, N. J. . . or for more information check CP 5889 on handy form, pages 2 and 3.

For more information on product at right, specify CP 5890 . . . see information request blank between pages 2-3.

*knowing **WITCO**
can improve your products...
better your processing*



WHO Witco Chemical Company celebrated its 30th Anniversary last year. From modest beginnings, we and our subsidiary companies have grown into an integrated organization of eight manufacturing plants, all working together to serve you.

INFORMATION on any of Witco's many different products produced at these plants is yours for the asking.

TECHNICAL SERVICE Witco's research and development laboratory in Chicago is now being expanded to more than twice its present size to . . . (1) develop new and better products . . . (2) serve you more promptly in the solution of your problems.

CHEMICALS and products made by Witco include: metallic stearates . . . driers . . . carbon black . . . asphalt specialties . . . Sunolite wax . . . plasticizers . . . vinyl resin stabilizers . . . and many defense items.

OFFICES are located in New York, Chicago, Boston, Cleveland, Los Angeles, Houston, Akron, and San Francisco where Witco representatives are ready and waiting to serve you.

WITCO CHEMICAL COMPANY

295 Madison Avenue

New York 17, N. Y.



LOS ANGELES • BOSTON • CHICAGO • HOUSTON • CLEVELAND
SAN FRANCISCO • AKRON • LONDON AND MANCHESTER, ENGLAND

Need help in MAKING FILTERAIDS GO FARTHER?

... a Dicalite Engineer's survey
will enable you to make sure of peak performance
in your use of diatomaceous filteraids

Accelerated industrial production in the last few months has taxed the capacity of all filteraid producers. There is sufficient supply if the material available is so used that it performs at maximum efficiency. You are welcome to any service we can give, either in conference with your engineers or by actual work in your plant.

A DICALITE ENGINEER, in long experience, has learned how to secure maximum performance from diatomaceous filteraids under all conditions. He may be able to recommend changes in filtration systems or methods of operation that may both reduce filteraid consumption and improve production. Costs may also be reduced.



THE DICALITE LABORATORY, with a staff specially trained in filtration techniques, is available if further work is required. Specially designed test equipment will demonstrate the actual results to be secured by any changes recommended in either the quantity or grade of filteraid.

Please understand that no obligation whatever is attached to acceptance of this offer. Our entire aim is to stretch the available supply of diatomaceous filteraid. If you feel that a check of your filtration operation would be helpful, or if you have a current filtration problem, please write our nearest office. A Dicalite Engineer will be glad to call at your convenience.

DICALITE® FILTERAIDS

DICALITE DIVISION, GREAT LAKES CARBON CORPORATION



NEW YORK 17, N. Y. • CHICAGO 13, ILL. • LOS ANGELES 17, CALIF.

SEND FOR
FREE COPY OF
BULLETIN B-12



When inquiring check CP 5891 on handy form, pgs. 2-3

MATERIALS

Lubricant, plasticizer, non-volatile solvent— butyl stearate . . .

used in coating, plastic, textile, paper, ink, lubricating, cosmetic, ceramic and metal fields

Uses: Ability of butyl stearate to lubricate a surface by gradual exudation or 'sweating out' and leaving an invisible film, thus preventing adhesion, has made its use of importance in label, paper, and cable lacquers. In the plastic finishing fields, its anti-block quality is useful when working with lacquered surfaces. These same properties can be utilized in treating coatings for polishing where good adhesion is required.

Metal industries find use for butyl stearate in stripping compositions since it prevents corrosion and is non-staining to metals. Because it is non-evaporating and naturally oily, it can be used for lubrication of rolled metal sheets, drawn wire, and in the formulation of penetrating oils.

As a plasticizer solvent, butyl stearate finds application in coating compositions, such as adhesives, lacquers, dopes, enamels, and in insulating compositions for covering wire. Cosmetic field employs it in lipsticks as a dye solvent and because it improves the 'slip' of the product. Lubricity quality can be made use of in skin creams.

Butyl stearate finds use as a plasticizer in protective coatings formulated with rubber hydrochloride.

Features: Made in two grades — cosmetic grade meets all requirements where a colorless butyl stearate is desired . . . the technical grade is available to users that have less strict color requirements.

Description: Butyl stearate is a colorless oily liquid which solidifies at temperatures below 19°C. It is relatively non-volatile and is compatible with a wide number of organic materials used in the protective coating, plastic, textile, paper, ink, lubricating, cosmetic, ceramic, and metal fields.

PHYSICAL PROPERTIES OF BUTYL STEARATE ($C_{18}H_{36}COOC_{4}H_{9}$)

	WITCO C-1 (Cosmetic Grade)	WITCO T-1 (Technical Grade)
Color, APHA	50	300
Acidity as stearic acid, %	0.05	0.1
Melting point, °C	19	20
Odor	practically odorless	
Specific gravity, 25°C	0.850-0.860	
Pounds per gallon	7.1	
Refractive index, 25°C	1.442	
Flash point (COC), °F	370	
Distillation range, 25 mm	210-220	
Solubility in water, %	0.2	

Source: Development of the Witco Chemical Company, Dept. CP, 295 Madison Ave., New York 17, N. Y. . . or for more information check CP 5892 on handy form, pages 2 and 3.

Prevents slipping on floor, resists traffic wear . . .

brush-applied coating is also resistant to action of chemicals, oils and dampness

Uses: Provides non-skid surface on metal, concrete or wood. Used on stair treads, ramps, loading platforms, plant aisles, and garage aprons. Can be applied in place of special metal treads or non-skid patches.

Features: One coat, applied by brush, is 2 to 6 mils

thick and resists wear of heavy traffic. It does not tend to abrade itself as is sometimes the case with paints made with carborundum or silica dust which, upon wearing, are covered with loose grains of the abrasive that cause further wear.

Coating is resistant to the action of chemicals, oils and dampness.

Description: Rubber-Coat Skid-Grip Floor Compound contains a special cellulose fiber which stays in suspension in the container but weaves itself into a close-fitting pattern when brushed on the floor. Colors available are tile red, club green, light gray, battleship gray, and black.

Surface to be coated must be free of grease, oil, wax or any surface type of preparation which impedes adhesion. Concrete floors should be washed with special compound and rinsed to make sure that adequate "tooth" is provided. Brushes used in applying can be cleaned in mineral spirits.

Although the chemical resistance of Skid-Grip is good, a thin coat of manufacturer's Vinyl Clear Coat should be applied over the Skid-Grip for resistance to brake fluid or stronger chemicals. The vinyl coat still allows for non-skid properties.

Source: Development of The Wilbur & Williams Company, Dept. CP, Brighton 35, Mass. . . . or for more information check CP 5893 on handy form, pages 2 and 3.

Corroded cast iron welded with bronze rod . . .

suitable for lap, square butt, and chamfer joints; conventional pre-welding preparations eliminated

Uses: Bronze welding rod for cast and malleable iron. Suitable for use on old, corroded, or dirty surfaces.

Features: Manufacturer reports this is the first bronze welding rod suitable for chamfer joints as well as square butt and lap joints. Because flow can be directed without extensive chamfering, even on butt joints, pre-welding preparations required by conventional rods are eliminated.

Description: Each EutecRod 148FC is covered with a special flux that gives initial tinning action. Tensile strength is up to 55,000 psi, and Brinell hardness is 75 to 120. Joints are full strength even on old, corroded surfaces.

Source: Development of the Eutectic Welding Alloys Corporation, Dept. CP, 172nd Street & Northern Blvd., Flushing, New York, N. Y. . . . or for more information check CP 5894 on handy form, pages 2 and 3.

Paint formulation studies treat low oil contents

Seven-page bulletin considers low oil content formulations for exterior paints. Wartime restrictions called for a cut from 5 to 3.75 lb linseed oil per gal. This was found to be too small a quantity of oil. Studies cited in this publication show that a paint reported to have good keeping and wearing properties can be made using from 4 to 4.3 lb per gal. Also included are constants, characteristics and tested formulations. Technical Bulletin 87 is issued by Archer-Daniels-Midland Company, Dept. CP, Box 839, Minneapolis 2, Minn. When inquiring specify CP 5895 on handy form, pages 2 and 3.

(CLIP AND FILE)

Are you seeking these unique properties?

IT WILL PAY YOU TO INVESTIGATE VICTOR POLYPHOSPHATES

The unusual properties of Victor sodium tripolyphosphate and tetrasodium pyrophosphate make them useful in many applications, and offer possibilities in others. From the data given here, you may see opportunities and want to investigate further. Experimental samples are available. Our research and development staff will welcome your inquiry and be pleased to work with you. Write today . . . on your company letterhead, please.

	SODIUM TRIPOLYPHOSPHATE				TETRASODIUM PYROPHOSPHATE			
Chemical Formula	$Na_5P_3O_{10}$ (Anhyd.)				$Na_4P_2O_7$ (Anhyd.)			
Typical Analysis	Phosphorus Pentoxide (P_2O_5) 57.5% Sulfates (SO_4) 0.07% Fluorine (F) 5 ppm* Arsenic (As_2O_3) 0.1 ppm* Lead (Pb) 0.4 ppm*				Phosphorus Pentoxide (P_2O_5) 53.1% Sulfates (SO_4) 0.07% Fluorine (F) 5 ppm* Arsenic (As_2O_3) 0.1 ppm* Lead (Pb) 0.4 ppm*			
Types Available	Powdered and Granular				Powdered and Granular			
pH — 1% Sol.	9.7				10.2			
Solubility in 100 Parts of Water	25° C.—14.5 pts. 40° C.—16.25 pts. 60° C.—19.25 pts.				25° C.—6.0 pts. 50° C.—16.5 pts. 75° C.—46.0 pts.			
Water Softening Efficiency—percentage of phosphate on weight of water required to secure zero hardness toward soap. Test waters contained 2 to 1 ratio of calcium to magnesium hardness.	Hardness PPM 50 0.05% 100 0.11 200 0.20 300 0.30 400 0.39 500 0.50				Hardness PPM 50 0.21% 100 0.38 200 0.56 300 0.66 400 0.75 500 0.88			
	F. F. F. F.				F. F. F. F.			
	Sodium Tripolyphosphate solubilizes both calcium and magnesium soaps.				Tetrasodium Pyrophosphate solubilizes magnesium soaps and disperses calcium soaps.			
Stability to Reversion in Hot Water Solutions. (Both products are stable for months in solution at room temperature.)	After 10 hours at 160° F. solution will contain approximately 98% STPP (unchanged), 1.2% pyrophosphate, and 0.8% orthophosphate. After 2 hours at 212° F. (boiling) solution will contain approximately 80% STPP, 12% pyrophosphate, and 8% orthophosphate.				After 10 hours at 160° F.—practically no hydrolysis—solution still contains approximately 100% of original concentration of TSP.			
Peptizing and Dispersing of Solid Particles.	Both products are very effective, the choice depending on nature of solid particles to be dispersed.				After 2 hours boiling—99% TSPP, 1% orthophosphate. After 20 hours boiling—90% TSPP, 10% orthophosphate.			
Prevention of Iron Stains	These phosphates hold iron in solution, preventing stains due to rusty pipes, equipment, or natural iron in water.				Water softening. Builder for detergents and soaps—including bar and chip soap (non-blooming). Industrial cleaners. Dispersant for pitch control in paper manufacture. Clay dispersing. Textile processing. Conditioning drilling muds.			
Uses					Water softening. Builder for soaps and detergents. Conditioning drilling muds. Industrial cleaners subjected to high temperatures for long periods. Stabilizing peroxide bleach baths. Clay dispersing. Textile processing. De-inking newsprint. Tin plating.			



VICTOR CHEMICAL WORKS

141 West Jackson Boulevard • Chicago 4, Illinois

A. R. Maas Chemical Co., Division • 4570 Ardine Street, South Gate, California

When inquiring check CP 5896 on handy form, pgs. 2-3

do these
ETHYL AMINES
fit into YOUR
product picture?



How you can
use them . . .

ETHYL AMINE*

- as a volatile alkali in process industries.
- as an intermediate for making: emulsifiers, plasticizers, dyestuffs
- as a deflocculating agent in manufacture of ceramics.

DIETHYL AMINE

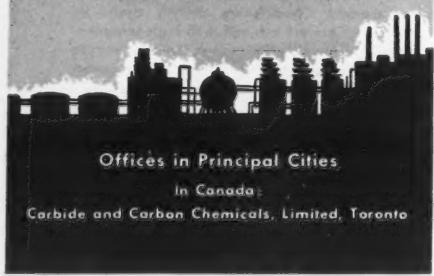
- as an intermediate for making: rubber accelerators, insecticides, pharmaceuticals, dyestuffs
- its sulfamic acid salt is an effective flame-retardant plasticizer for paper.

TRIETHYL AMINE

- as an inhibitor for chlorinated solvents.
- as an anti-liverner agent in urea- and melamine-based enamels.
- for solubilizing 2,4-D, a selective herbicide. Only 101 lb. of Triethyl Amine needed to neutralize 221 lb. of 2,4-D.

CARBIDE AND CARBON CHEMICALS COMPANY

A Division of
Union Carbide and Carbon Corporation
38 East 42nd Street UCC New York 17, N.Y.



All three of these amines are available in commercial quantities. One of them may be just the answer to your product or process problem. Investigate them now by asking for samples and information on your company letterhead. Be sure to ask for technical bulletin F-7408A, "Alkyl Amines."

OTHER ALKYL AMINES

When you are considering alkyl amines, keep in mind that CARBIDE also supplies *n*-Butyl, *Di-n*-Butyl, Isopropyl, *Diiso*-propyl, *2*-Ethylhexyl, and *Di* (*2*-Ethylhexyl) amines. Samples and technical data are available to help you evaluate them.

*Commercial grade is a 70% aqueous solution.

When inquiring check CP 5897 on handy form, pgs. 2-3

MATERIALS

Protects cellulosic materials from mildew, mold

Because of its penetrating power and inert nature, copper naphthenate is a preservative having good permanence. It is effective against fungus, mold, mildew, and marine growths. No harmful effect is found on metal, wood, or fabric. Petroleum and oil solvents are used to dissolve this material and the solution may be used for dipping, painting, or spraying. It is generally non-toxic.

Manufacturer's report gives information concerning the use of 8% copper naphthenate for protecting fish nets, cordage, twine, canvas, tarpaulins, lumber fence posts, etc. Technical Service Report P-15 is issued by Witco Chemical Company, Dept. CP, 295 Madison Ave., New York 17, N. Y. When inquiring specify CP 5898 on handy form, pages 2 and 3.

Metallic coats for plastics approach brilliancy of plating, metalizing . . .

carrier makes metallic particles 'lie down' for maximum light reflectance

Uses: Used as a carrier for bronze or aluminum powders in coating the reverse side of clear plastics (polystyrene) to gain metallic finishes.

Features: Finish is almost as brilliant as plating or metalizing. Coating will not craze or crack strained pieces of plastic; good adhesion, abrasion resistance, color fastness, and resistance to heat and cold are reported.

For those who don't want to mix their own bronze or aluminum coating, or other brilliant metallic color coatings, manufacturer will mix the materials to any specification.

Description: Logoquant R 2513 was developed to overcome the undesirable feature of most carriers that caused metallic particles to 'stand on edge', thereby reflecting little light and hence producing a dull finish. R 2513 allows the metallic particles to 'lie down', consequently the brilliancy of finishes.

Source: Development of the Bee Chemical Company, Dept. CP, 13799 South Avenue "O", Chicago 33, Ill. . . or for more information check CP 5899 on handy form, pages 2 and 3.

For extinguishing fires of petroleum products and polar solvents . . .

liquid type mechanical foam forms free flowing, close knit fire smothering blanket

Uses: For extinguishing fires involving polar solvents or petroleum products.

Features: Foam is easily generated in a mechanical system and flows freely to provide a smothering, close knit blanket of fire killing foam. Re-ignition cannot occur if the foam mass is broken since it quickly reseals itself. The foam will neither readily break down nor disintegrate. It adheres and insulates all types of surfaces.

Description: Aer-O-Foam 99 is a non-corrosive, free-flowing liquid at temperatures as low as 10°F. If frozen, it maintains its effectiveness on thawing out. It can be used in a wide choice of application devices (including existing 6% mechanical foam making pro-

portion devices, providing an average expansion of 10 here), and is easily stored in large tanks.

Source: Development of the National Foam System, Inc., Dept. CP, West Chester, Pa. . . . or for more information check CP 5900 on handy form, pages 2 and 3.

Sulfone is effective synergist in combination with DDT . . .

dichloro diphenyl sulfone offered in research lots

Uses: Suggested as an intermediate in chemical synthesis. Has potential application as a biocide. Reported to be an effective synergist in combination with DDT.

Features: Being offered in research quantities.

Description: Dichloro diphenyl sulfone is a free flowing white powder with a faint aromatic odor. Nitration introduces the nitro group in the 3,3' positions. Diamino diphenyl sulfone can be obtained by ammonolysis of the chlorine atoms. Following reagents cleave the compound at the sulfone bridge: H_2SO_4 , Na amalgam, and sulfur.

Empirical formula is $C_{12}H_8Cl_2O_2S$, molecular weight 286.3, melting point 140-143°C (sublimes if heated carefully). Soluble in alcohol, benzene, acetone, acetic acid, and water.

Source: Announcement of Merrimac Division of Monsanto Chemical Company, Dept. CP, Everett, Mass. . . . or for more information check CP 5901 on handy form, pages 2 and 3.

High proportion of extenders used in paints formulated with lead base pigment . . .

especially recommended for rust-preventing coatings

Uses: Anti-rust pigment for paint formulations.

Features: High proportions of extenders can be included in paint formulations without diminishing the rust preventive properties of the pigment. This is an economy feature.

Description: Lead Cyanamide DK825 pigment is designed for blending with linseed oil varnish and numerous other binding agents. Prepared paints can be used as basic or top coats. Used as a basic coat, strong and durable properties afford effective protection against corrosion.

Paints using DK825 have 'low' specific gravity, good covering power, store well, are easily applied by brushing or spraying, and do not thicken or settle.

Source: Sample of pigment may be obtained from Millmaster Chemical Corporation, Dept. CP, 420 Lexington Ave., New York 17, N. Y. . . . or for more information check CP 5902 on handy form, pages 2 and 3.

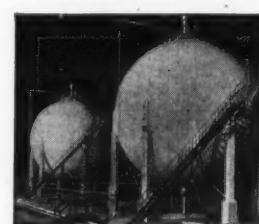
Methoxychlor data given

Manual outlines the effective use of this insecticide. Special attention is given to differences in method and dose for specific insects. Twelve-page publication "Marlate" is issued by Grasselli Chemicals Dept., E. I. du Pont de Nemours and Co., Inc., Dept. CP, Wilmington, Del. When inquiring specify CP 5903 on handy form, pages 2 and 3.

These are only a few of the many fields where ethylene oxide is a useful raw material. Such widespread use rests on the ability of ethylene oxide to enter into countless reactions. For example, this chemical will react with . . .

- Organic acids to form glycol esters
- Alcohols and phenols to form glycol ethers
- Ammonia to form ethanolamines
- Mercaptans to form thioglycols and ethers
- HCN to form ethylene cyanohydrin

Shipped in tank cars or in ICC 5P insulated drums, 400 lbs. net. Samples for experimental use are available. Please make requests on your company letterhead . . . address to Department D.



★ National defense requirements have created emergency demands for Jefferson chemicals. Although our facilities are being expanded as rapidly as possible to cope with these requirements, many of our chemicals are currently in short supply. We nevertheless welcome your inquiries and will make every effort to serve you.

Pressure spheres store ethylene oxide at the Jefferson plant at Port Neches, Texas.

Jefferson Chemical Company, Inc.

711 FIFTH AVENUE, NEW YORK 22, N. Y.



ESSENTIAL CHEMICALS FROM HYDROCARBON SOURCES

ETHYLENE OXIDE
DIETHYLENE GLYCOL
ETHYLENE DICHLORIDE
ETHYLENE GLYCOL

When inquiring check CP 5904 on handy form, pgs. 2-3

Briefs

From recent literature

1. **Phenoxyethyl ethers** result from the reaction of ethylene oxide with phenol or alkyl phenols at superatmospheric pressures and temperatures of 190-210°C. in the presence of sodium phenoxide. Phenoxyethanol forms preferentially, but continuation of the reaction gives a mixture of higher polyether condensation products, the composition of which follows the Poisson series.

2. **Corrosion** of oil well apparatus is cut down by 50% or more by injecting ethylene oxide into the well so that it mixes with the fluids which contact the well parts. The quantity of ethylene oxide required varies widely according to the corrosiveness of the particular well fluids.

3. **Acetaldehyde** results in 85% conversion when ethylene oxide is passed at 250°C. over a catalyst consisting principally of chromium oxide and cadmium chloride.

4. **Bread** remains fresh for several days when a small amount of a polyoxyethylene ester of a higher fatty acid, such as polyoxyethylene stearate, is incorporated into the dough. The ester is formed by condensing 6 to 16 moles of ethylene oxide with one mole of the acid.

5. **Detergents** are prepared by passing ethylene oxide through molten mercaptobenzothiazole until about 10 moles of the oxide have been absorbed. The detergent, after building, cleans well in hard or soft water.

These developments are abstracted from recent publications or U. S. patents. They may suggest applications of Jefferson Ethylene Oxide in your products or processes.



"Wonder-worker" for the wonder drugs

How
Celite
filtration
assures purity,
speeds production

When producers of antibiotics sought a filter aid that would assure removal of all mycelium and other gelatinous impurities in the broth from which wonder drugs are extracted—and speed their "put-through" in the bargain—Celite ended the search.

The effectiveness of Celite can be attributed to these important factors which make it unique among filter aids:

Carefully processed from the purest deposit of diatomaceous silica known, Celite is available in nine standard grades—each designed to trap out suspended impurities of a given size and type. Whenever you reorder, you are assured of the same uniform, accurately graded powder re-

ceived in your initial order. Thus, with Celite, you can count on consistent purity in your filtrates—at highest rate of flow—month after month, year after year.

The manufacture of wonder drugs is just one of the many processes in which consistent purity and faster filtration have been obtained through the use of Celite. Your own filtration problem, regardless of the product involved, can no doubt be solved with the proper grade of Johns-Manville filter aid. To have a Celite Filtration Engineer study your problem and offer recommendations, without cost or obligation, just write Johns-Manville, Box 290, New York 16, N. Y.

Celite is a registered Johns-Manville trade mark



Johns-Manville CELITE
FILTER AIDS

When inquiring check CP 5905 on handy form, pgs. 2-3

MATERIALS

Sugar cane processing

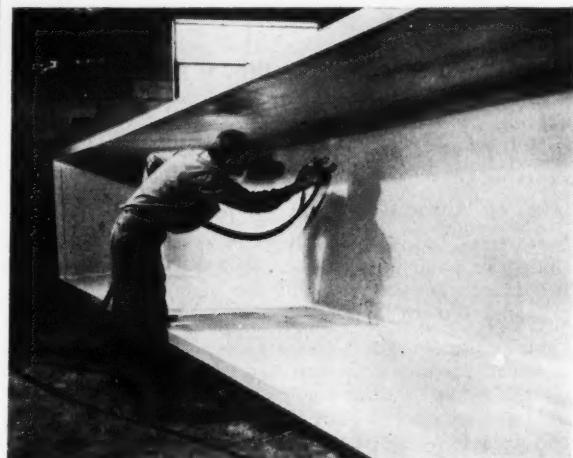
Two-color, 16-page bulletin describes sugar cane processing, stressing the use of the cane mud filter. Installations, capacities, costs and construction details are given. Publication features a map of the world showing locations where this equipment is in use. Besides beet and cane sugar processing, this filter has found use in ceramics, chemical, coal, metallurgical, paper, and sewage work. Bulletin 215-R is issued by Oliver United Filters Inc., Dept. CP, 33 W. 42nd St., New York 18, N. Y. When inquiring specify CP 5906 on handy form, pages 2 and 3.

Offers service for coating practically anything with rubber . . .

applied by spraying or dipping in any thickness, on almost any surface, and in colors

A protective coating service is announced by the American Rubberizing Company that should be of interest to those within a 600-mile radius of the Twin Cities. Coatings can be either natural or synthetic rubber, but for the most part are neoprene for its superior properties. There are no limits to size, shape, or quantity of equipment when application is by spraying; however, items that are dipped must not exceed 6' long x 3' high x 2' deep. Coatings can be applied in any desired thickness, on almost any surface, and in colors.

Equipment presently being coated includes tanks, chutes, plating racks, screens, etc. The illustration shows a 20 x 4



x 4' steel tank used for nickel plating being spray-coated with 3/16 to 3/8" of neoprene for acid resistance.

(Information received from the American Rubberizing Company, Dept. CP, 617 11th Ave. South, Minneapolis, Minn. . . or for more information check CP 5907 on handy form, pages 2 and 3.)

Variety of types covered in coatings catalog

Full-color, 16-page catalog describes many coatings for use on industrial equipment. Types of synthetic resin base paints are recommended for specific applications. Coal tar coatings for pipeline work are described. Both resins and pipe coatings are compared in data tables. "Control Corrosion" is issued by Pittsburgh Coke & Chemical Co., Dept. CP, Grant Bldg., Pittsburgh 19, Pa. When inquiring specify CP 5908 on handy form, pages 2 and 3.

MATERIALS

α -Methylbenzyl amines have possibilities as intermediates . . .

provide means of introducing the α -methylbenzyl group

Uses: α -Methylbenzylamine is suggested for use in preparation of amine salts and amides, emulsifying agents, dye-stuff gas-fading inhibitors, and other textile specialties. It is also suggested for absorption of carbon dioxide in non-aqueous scrubber fluids.

α -Methylbenzyl monoethanolamine is a secondary amine whose hydroxyl group can be esterified. Offers possibilities as an emulsifying agent or in preparing amine salts and amides.

α -Methylbenzyl diethanolamine, in addition to use in preparation of emulsifying agents and the common reactions to form amine salts and esters, forms quaternary bases by reaction with alkyl halides. Such bases may be of interest in new detergents and germicides.

All of these intermediates provide means of introducing the α -methylbenzyl group into more complex molecules.

Description: These three intermediates undergo reactions typical of aliphatic amines, with the added feature that reactions on the benzene ring are possible when the free amine or hydroxyl groups are blocked by acetylation. All are liquids with mild ammoniacal odors, are moderately soluble in water, and soluble in organic solvents.

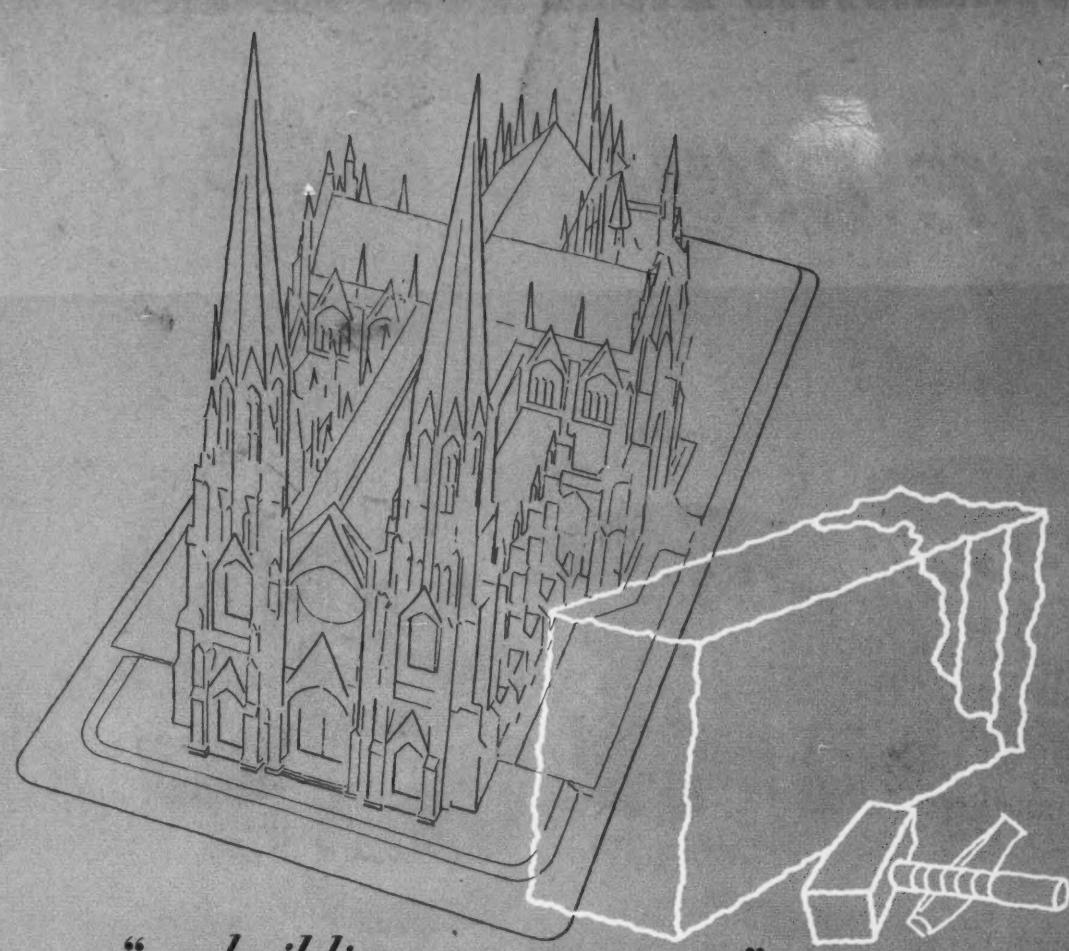
Boiling point (50 mm Hg) and freezing point for α -methylbenzylamine, α -methylbenzyl monoethanolamine, and α -methylbenzyl diethanolamine are, respectively, 114 and -65°C, 182 and -15°C, and 244 and -7°C.

Source: Carbide and Carbon Chemicals Company, a Division of Union Carbide and Carbon Corporation, Dept. CP, 30 E. 42nd St., New York 17, N. Y. . . or for more information check CP 5909 on handy form, pages 2 and 3.

Shows spot welding

8-1/2 x 11" chart gives recommended schedules for spot welding low carbon steel. Issued by Ampco Metal, Inc., Dept. CP, 1745 S. 38th St., Milwaukee 46, Wis. When inquiring specify CP 5910 on handy form, pages 2 & 3.

For more information on product at right, specify CP 5911
see information request blank between pages 2-3.



"... building A CATHEDRAL . . . "

A philosopher stood watching three stonecutters and of each in turn he asked: "What are you doing?" The first said: "I am cutting stone." The second: "Why, I am earning a dollar an hour!" The third said quietly: "I am building a Cathedral."

This is a very old and oft repeated story. We tell it again because its essence, the turn-of-mind of the third stonecutter, shared by chemists, explains the success of the American Chemical Society now celebrating its Diamond Jubilee. The nation's chemists with their deep professional interest far beyond any immediate task, have abundantly fulfilled their credo of "fostering public welfare and education, aiding the development of our country's industries and adding to the material prosperity and happiness of our people."

MALLINCKRODT CHEMICAL WORKS • St. Louis • New York • Montreal

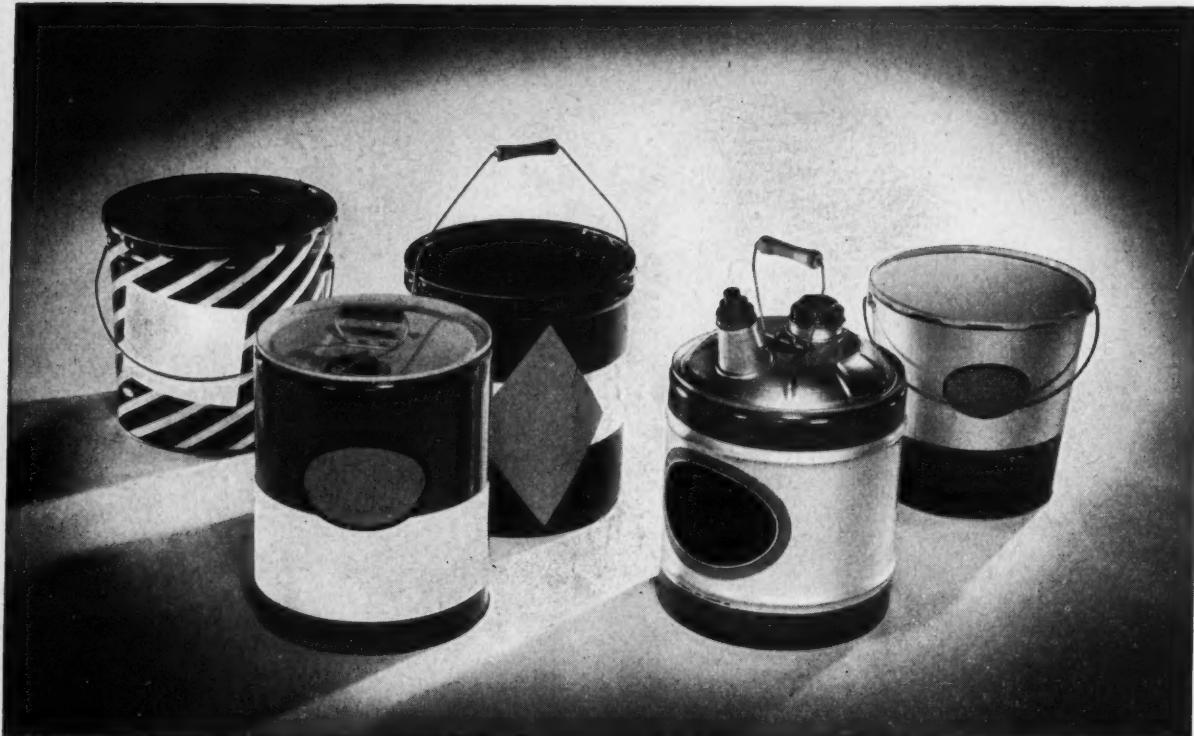


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CHEMICALS • CHEMICALS FOR ELECTRONIC
USES • METALLIC SOAPS • ANALYTICAL
REAGENTS • PHOTOGRAPHIC CHEMICALS

• MANUFACTURERS OF FINE CHEMICALS FOR INDUSTRY • SINCE 1867 •

CONTINENTAL STEEL CONTAINERS

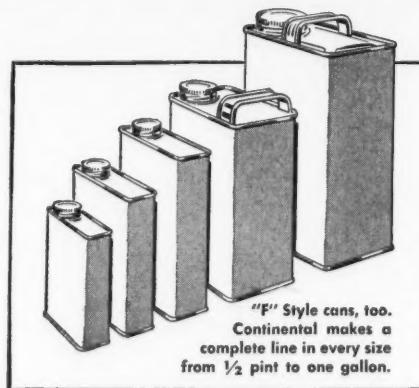
are built to take it!



Continental steel containers are not only good looking, but are built to take it. They protect a wide variety of products en route, take rough handling in stride and arrive at their destination bright, tight, and beaming sales appeal.

Here's another feature: Continental's master lithographers have the skill and experience it takes to make a trade-mark and sales message the center of attraction—and by faithful reproduction of design, make steel containers part of the package "family."

Remember, Continental is the largest producer of utility containers in the United States.



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When inquiring check CP 5912 on handy form, pgs. 2-3

MATERIALS

Cork insulation kept in service for 30 years by regular maintenance programs . . .

average cost of simple maintenance procedure is negligible compared to value of insulation

By taking simple measures to maintain cork coverings on refrigerated lines, some companies have been able to prolong service life to 25 or 30 years and more.

Maintenance, requiring only a little work each year, consists of replacing loose or broken wires, repairing small breaks with brine putty, and painting with cork covering paint at least once each year. Average cost of such repairs is negligible compared to the value of the insulation.

Usually the winter months are best suited for inspecting and repairing indoor insulation. The refrigeration load is less and business is usually in its slack season. Outdoor lines, of course, should be repaired during the warmer weather when working conditions are more favorable.

First step for indoor lines is to tighten loose wires and replace missing wires. There should be at least six wires to each section of pipe covering. Copper clad



This is what happens when pipe covering is abused and neglected over a period of years. Repeated bumping by ladders and handtrucks and other mechanical abuse cracked the cover. Frost formed in the cracks and then spread along the pipe.

steel wire is recommended because it has both strength and corrosion resistance. Gauge of wire to be used varies from 10 to 14 depending on the diameter and weight of pipe covering.

On large pipe sizes, bands are frequently used on 8 to 9" centers. They should be bands made especially for insulation work and of galvanized, Monel metal, or stainless steel, 0.5" wide and 0.015" in gauge.

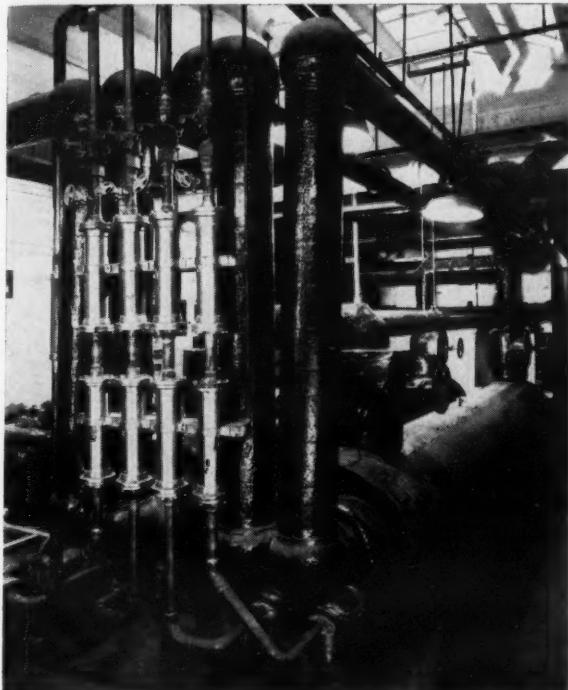
Covering should be inspected for open joints. If section is warped or damaged, it should be replaced with a new section. If still in good condition, it should be dried and then installed again.

Chips, dents, gouges, and deep scars should be repaired with a special filler such as Armstrong's 27B Seam Filler. This material, a blend of asphalts, solvents and special reinforcing fibers for low-temperature use, has putty-like characteristics. It can be trowelled on to cover large holes or pushed in with the thumb to fill small holes.

MATERIALS

The next step, painting with cork covering paint, is very important as the paint fills small cracks and crazes in the old finish and keeps them from getting larger. It also reduces moisture and air leaks in the insulation, and protects wires and bands from corrosion. Paint should be of the type not affected by brine, ammonia and other fumes commonly found around refrigeration plants.

On indoor lines finished with canvas, the only maintenance normally required is repainting as often as



Regular maintenance keeps coverings in this condition at all times

necessary — usually every three to five years. Where bad dents have broken through the canvas jacket or where severe damage has occurred, the covering should be repaired with either new covering or 27B Seam Filler, followed by a patch of new rosin-sized paper, canvas and paint.

Maintenance of outdoor lines and equipment depends upon the type of original finish. Asphalt saturated felt should be inspected and repaired in the same manner as indoor coverings, with a yearly painting. Felt should be sufficiently lapped, and in the right direction, to form a watershed. Also, paint should seal thoroughly all laps in the felt.

With Insulmastic or a Weatherproof Plastic finish a yearly inspection is advisable; however, painting each year may not be necessary. Damaged sections of a job finished with Insulmastic should be repaired with Insulmastic. If the breaks extend into the wire mesh, the mesh should be patched with Weatherproof Plastic. Damaged fabric should be replaced. In both cases, after patching the damaged area should be painted to give complete protection.

(S. C. Martin, Manager, Low-Temperature Insulation Department, Armstrong Cork Company, Dept. CP, 1010 Concord St., Lancaster, Pa. . . . or for more information check CP 5913 on handy form, pages 2 and 3.)

Onyx Announces
A NEW
Non-Ionic Detergent
ONYXOL 336
Combining High Viscosity
Foaming . . . Wetting
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THICKENS . . . aqueous solutions exhibit high viscosity without use of additives.

FOAMS . . . copiously providing highly stable small bubbles.

CLEANS . . . both hard surfaces and textiles.

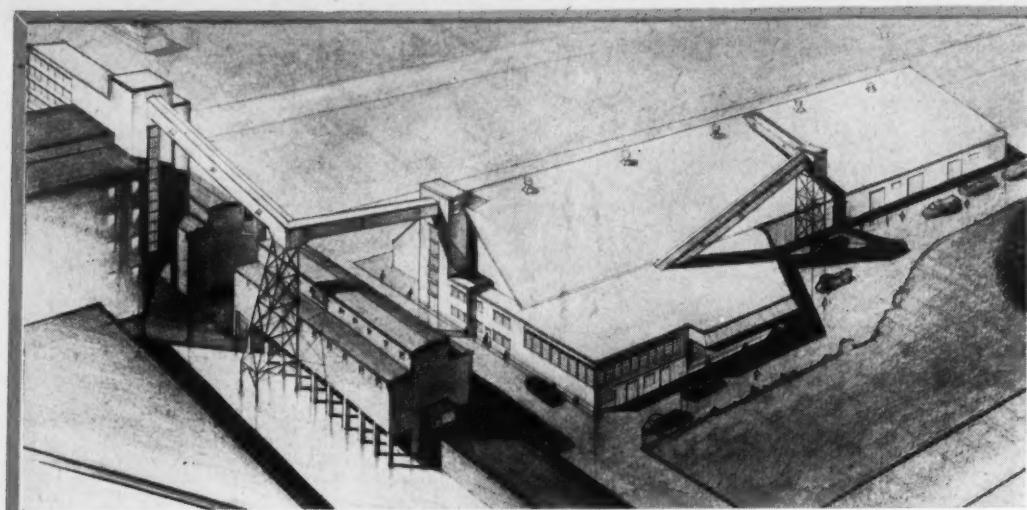
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West Coast Representative: E. S. Browning Co., San Francisco, Los Angeles

When inquiring check CP 5914 on handy form, pgs. 2-3



Material Handling

Sugar enters at top center of prismoidal-shaped warehouse by an enclosed, inclined belt conveyor. When required for the affination and carbonation building, it is raised by a bucket elevator at the end of the building on the left

View of floor slot through which sugar falls onto belt conveyor



Raw sugar is pushed into position near drop gates so that it will fall continuously to conveyor belt in tunnel running below



Rubber-tired vacuum sweeper recovers sugar that is passed over by the bulldozer, helps to keep warehouse floor clean

Cost of Bulk Handling of Sugar in Warehouse Greatly Reduced

Sugar is removed by opening floor slots, permitting it to fall onto a belt conveyor in tunnel below; prismoidal shape of warehouse eliminates need for reinforced walls

PROBLEM: In setting up a large scale modernization program to increase facilities for producing refined cane sugar, the Canada & Dominion Sugar Company found it necessary to provide accommodations for storing sugar during icy winter months when weather prevented boat deliveries of raw sugar from the British West Indies, Australia, Mauritius, and other sugar producing countries. Shipping on the St. Lawrence river during the winter was usually shut-down for approximately 22 weeks.

Specifications for the warehouse included maximum storage space at the lowest possible construction cost, insulation against large temperature and humidity changes, and an economical bulk handling system.

A concrete silo appeared to be the most utilitarian type of storage bin, but for the required capacity foundation costs would have been excessive. The conventional rectangular bin-type warehouse was also considered, but it would have required costly heavily reinforced walls

to counteract the outward thrust of the bulk of sugar.

Solution: Because there was a full city block available over which the warehouse could sprawl, a relatively air-tight prismoidal-shaped warehouse was constructed. Measuring 507 ft long, 120 ft wide and 85 ft high, it has a capacity to easily store the 40,000 long tons required during the winter months.

Control of condensation, essential in the storage of raw sugar, was obtained by proper insulation. Lightweight concrete slabs, 2-3/4" thick, were used as part of the roof, with 1" wood fiber insulation and a 4-ply roof on top of the slabs. Low concrete walls topped by an insulated asbestos-cement siding make up the end walls of the building. Thermostatically controlled heating units that maintain temperatures at a minimum of 40°F help control humidity in the warehouse.

Sugar in bags is trucked from dock to plant through a cutting-in station adjoining the warehouse. Here three trucks, each carrying up to 27 bags of 325 pounds each, can be unloaded simultaneously.

While bags are moved by conveyors, they are manually slit and attached to hooks which are part of a trolley conveyor system. The latter conveyor suspends slit bags in the air so that sugar falls free into three crushers while empty bags are conveyed to a bag pile and subsequently transferred to a bag washing department.

After passing through crushers, free-flowing sugar drops onto belt conveyor in a tunnel below street level and is directed automatically to either warehouse or refinery, depending upon the imminent needs of the refinery. Sugar is carried to the warehouse by an enclosed belt conveyor inclined at a 14-degree angle so that sugar is

elevated to a point at the apex in the center of the warehouse.

Entering the warehouse through the roof at mid-point, sugar drops on a travelling shuttle conveyor belt, 66 feet above the floor. This reversible conveyor is mounted on tracks so the sugar can be fed into the warehouse at any point. Sugar is deposited in a long pile, or windrow. The heavily reinforced concrete floor, supported by 2200 concrete piles, is designed to carry the load of maximum storage and is paved with 1-1/2" of sheet asphalt containing siliceous (non-limestone) aggregates to avoid concrete corrosion.

When sugar is required at the refinery, manually operated sliding control gates that seal 42 slots in the floor (20" square and approximately 12' apart) are opened so that sugar can drop to a belt conveyor in a tunnel below. Terminus of this belt conveyor is the tower at one end of the warehouse where sugar drops into a disintegrator consisting of four shafts to which one-inch pins are attached. Meshing action of pins as shafts rotate reduces any lumps of sugar passing through to a size less than two inches in diameter. Sugar is then picked up by a bucket elevator for delivery to the affination and carbonation building standing nearby.

To supplement the natural gravity flow of sugar through the floor openings, which run lengthwise in the center of the floor, a rubber-tired tractor with a special bulldozer blade is used to push the sugar above the openings. Sugar that is passed over by the bulldozer is recovered by a small rubber-tired sweeper driven by an 8-hp motor. Sweeper has a 4' rotary brush and a 9 cubic foot vacuum tank.

Results: Use of a prismatic warehouse eliminates need for heavily reinforced walls and cuts down on waste space, for the 39-degree roof follows the lines of a raw sugar pile, which, in the natural angle of repose, is about 39 degrees. Construction costs were therefore considerably less than would have been required by other types of structures.

Method of handling bulk sugar is estimated to have reduced handling costs per ton by about 75%. New facilities have a rated capacity of 300 tons per hour.

Source: Additional information on the material handling system described above can be obtained from F. H. McGraw & Company, Dept. CP, 51 East 42nd St., New York 17, N. Y. . . or for more information check CP 5915 on handy form, pages 2 and 3.

Trucks, hoists perform in film against "circus" background . . .

fork and pallet trucks, stackers, pallet unloader are all put through their paces

A circus motif, as the title "Top Performance" implies, is used in a motion picture on modern materials handling. The 22-minute film shows how a wide variety of attachments are used on various trucks for handling bulk materials, bales, kegs, boxes, rolls, bins and other loads. Reduction in physical effort by employes and savings in time and floorspace are emphasized.

Equipment demonstrated in the picture includes gasoline and electric fork trucks, motorized stackers, platform and pallet trucks, hand and electric hoists and a number of attachments.

("Top Performance," preview prints of which are available, has been produced by Yale & Towne Mfg. Co., Philadelphia Div., Dept. CP, 11,000 Roosevelt Blvd., Philadelphia 15, Pa.)

AUGUST, 1951

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Fulton's W.P.P.L. (Waterproof Paper Lined) Bags are designed for factory-fresh delivery of products that are subject to sifting or to damage from outside influences.

Fulton's W.P.P.L. Bags are made of cotton or burlap, with tough crinkled Kraft paper or plastic lining laminated to the bag with various adhesives. They are the ideal containers for export or domestic shipments of hydroscopic materials, and products to be protected against absorption of moisture or odors while in storage or transit.

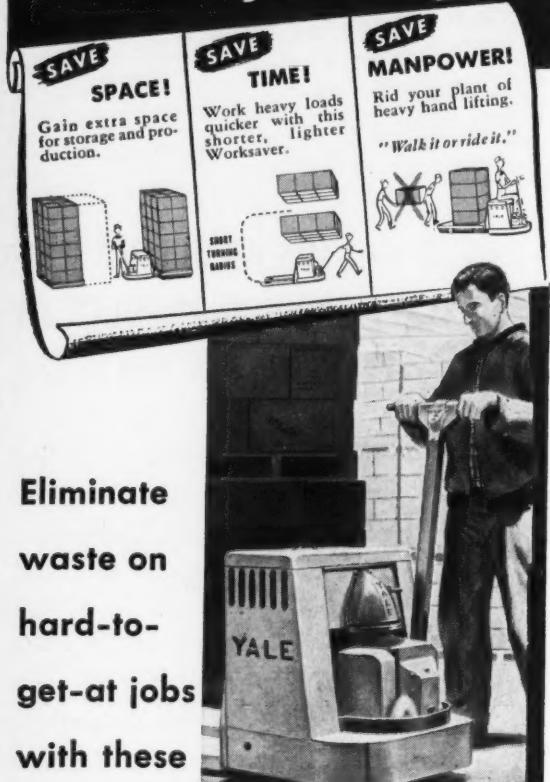
These tough, sturdy bags have advantages over rigid containers, in that they are flexible, easier to handle and require minimum storage space. Maybe the Fulton W.P.P.L. is the container you have been looking for. It's certainly worth your investigation. Address the Fulton factory nearest you.

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When inquiring check CP 5916 on handy form, pgs. 2-3

SQUEEZE PLAYS... that save you money!



YALE WORKSAVERS

SAVE SAVE SAVE—that's the story of YALE'S Stubby Worksaver! These pallet or platform trucks squeeze into small spaces to do big moving and lifting jobs...open up whole new areas of your plant to faster, more efficient materials handling...cut your time and labor costs as much as 75%!

The Yale Worksaver is a rugged trouble-free truck, too! A powerful electric drive unit, hydraulic lift and welded steel frame keep it on the job for years with a minimum of servicing.

YALE is the registered trademark of The Yale & Towne Manufacturing Co.

YALE & TOWNE

THE YALE & TOWNE MANUFACTURING CO., Dept. 128
Roosevelt Boulevard & Haldeman Avenue, Philadelphia 15, Pa.

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 Please send me free "Worksaver" literature.
 Please send me free literature on Hand Trucks.

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Company _____
Street _____ City _____ State _____

The Yale & Towne Manufacturing Co., Philadelphia 15, Pa.
In Canada write The Yale & Towne Mfg. Co., St. Catharines, Ontario.

When inquiring check CP 5917 on handy form, pgs. 2-3

Page 42

MATERIAL HANDLING

Moving stampings automatically prevents damage, saves labor in loading tote boxes . . .

cleated belt conveyors easily moved from press to press; stand firmly without floor locks

Uses: Designed to eliminate multiple handling of stampings. Automatically picks up parts as they drop from stamping press and delivers them to tote box or truck. Also, it can elevate parts to gravity chute leading to next operation.

Features: Press operators do not have to shovel parts into tote boxes to clear discharge chute of press. Handled singly on conveyor belt, there is no danger of damage to the parts. There is no interruption to press operations.

Description: Device is essentially a small cleated conveyor belt, self-powered and adjustable to various loading heights. Built in 6 and 8' models. Model P-1206 (illustrated) has a length of 6' 5" (center-to-center of pulleys). The 12" wide, 4-ply cotton belt has 1" high cleats every 24". It is powered by a 1/3 hp gearhead motor which drives the belt at 72' per minute.

Minimum loading height is 7", maximum 61-1/2"; maximum inclination 45°.

Conveyor frame is welded heavy gauge steel. Hand truck type wheels afford easy mobility in moving unit from press to press. Wide base allows unit to stand firmly in operating position. No floor bolts or locks are required. An automatic gate keeps parts from sliding off the belt until picked up by a cleat.

Source: "Press-Vator" conveyors are built by E. W. Buschman Co., Dept. CP, Spring Grove & Clifton, Cincinnati 32, Ohio . . . or for more information check CP 5918 on handy form, pages 2 and 3.

Improved steering mechanism makes it easier to handle fork lift truck . . .

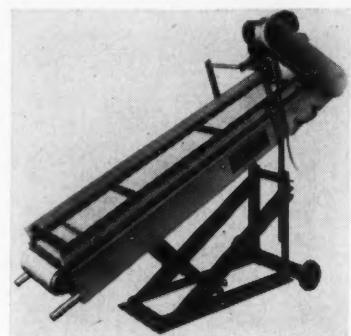
mechanism's gear ratio is greater; double wheel instead of single used on steering trunnion

Uses: Fork lift truck for handling loads to 4000 lb.

Features: Wheel design has been improved for easier steering. Only seven turns of the steering wheel swing the trunnion 120 degrees, instead of 10.3 turns as required previously. Even when truck is stationary the trunnion can be turned with little effort, says the maker.

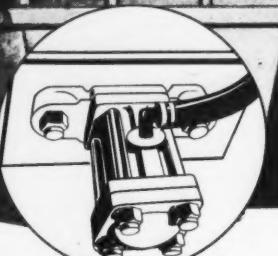
Description: All Model YT-40 lift trucks now are being equipped with dual wheels instead of a single wheel on steering trunnion. Present single-wheel type Model 40's can be converted to dual-wheel with little alteration. Gear ratio in steering mechanism of new design is 31 to 1 instead of 20.7 to 1.

The Model 40 industrial type pneumatic tire size has



Loading height 7 to 61-1/2"

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Steady jam-free flow of granular or powdered materials is assured by use of SPO air vibrators. Delivering powerful hammer-like blows, these sturdy units prevent clogging and packing in bins, hoppers and chutes. Exclusive feature of all SPO air vibrators is a special corrosionproof bronze alloy cylinder liner which provides thorough lubrication, full-power starting, high-speed operation and maximum service life.

SPO offers a complete range of types and sizes designed to meet every vibration need. **Blow for Blow, you can't beat SPO air vibrators!**

For complete information, write today for Bulletin 50.
245 SI

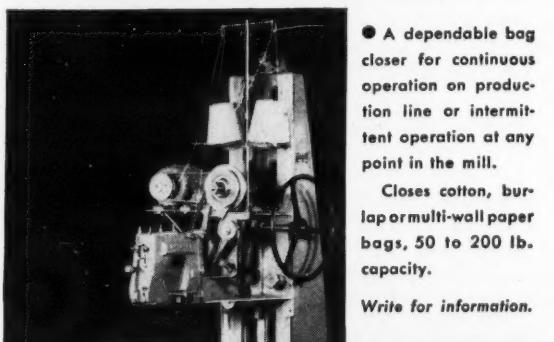


INCORPORATED

6531 Grand Division Ave. • Cleveland 25, Ohio

When inquiring check CP 5919 on handy form, pgs. 2-3

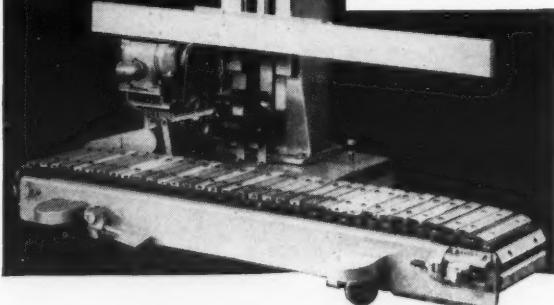
**FAST, FLEXIBLE, HEAVY DUTY BAGGER
CONSOLIDATED Model 105**



• A dependable bag closer for continuous operation on production line or intermittent operation at any point in the mill.

Closes cotton, burlap or multi-wall paper bags, 50 to 200 lb. capacity.

Write for information.



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When inquiring check CP 5920 on handy form, pgs. 2-3

CHEMICAL PROCESSING

been reduced to 6.00 x 9 to provide interchange with tires on manufacturer's Model 20 (2000 lb capacity) truck. Removal of an accessible lock stud permits rapid and convenient tire service and maintenance.

Source: Built by Hyster Company, Dept. CP, 2902 N.E. Clackamas St., Portland 8, Ore., in its Danville, Ill., plant . . . or for more information check CP 5921 on handy form, pages 2 and 3.

**Convenient level maintained
for material before, after
machine processing . . .**

electro-hydraulic platform lifters placed at each side of machine speed flow of work

Uses: For keeping materials to be processed at convenient working height and/or lowering level of processed material as it piles up. Will accommodate accumulating or total loads up to 4,000 lb.

Features: Electro-hydraulic power provides effortless operation. Plugs into practically any light socket. Pan type platform lowers to floor so that unit loads on skid platforms, or pallets, can be readily placed on the lifter by means of lift truck. Pan platform can also be



Adjustable lifter speeds paper trimming

locked at various heights so that truck can move entire lifter to new location with minimum of effort. Lifting and lowering mechanism is remotely controlled by pedal switches which can be moved at operator's convenience.

Description: Unit has maximum lifting height of 42". Platforms available in lengths of 36, 42, 48 and 54" and in widths of 32 and 38" (inside dimensions). Overall lengths of these units are only 8 1/2" more than length of platform used. Similarly, width is only 6 1/2" more than that of platform.

Lifting and lowering mechanism consists of 1/3 hp, 115 v, 60 cps AC motor connected to builder's own special piston pump which delivers oil under pressure to the hydraulic lifting ram. Ram itself is fitted with a chrome plated plunger, replaceable bronze guides, spring loaded packing and a flow regulator valve to control lowering of the platform at a safe, uniform speed under all load conditions. Built-in overload pressure relief valve, preset and sealed at factory, prevents abuse.

Source: Electro-hydraulic working height lifter is built by Lewis-Shepard Products, Inc., Dept. CP, Watertown, Mass. . . . or for more information check CP 5922 on handy form, pages 2 and 3.



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Chase Sharkraft sharply reduces costly breakage . . . it is, indeed, BUILT TO TAKE IT! Available in 2 to 5 plies of extra strong crinkled kraft. Furthermore, it provides a sure grip . . . it's easier to handle and stack, and you'll like the sharp, colorful printing of this better container.

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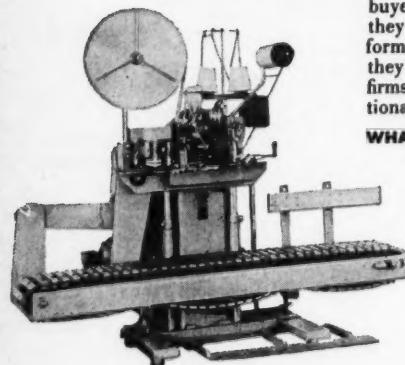
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When inquiring check CP 5923 on handy form, pgs. 2-3



YOU'LL KNOW THE Bagpaker® BY THE COMPANIES IT KEEPS



These companies are repeat buyers of Bagpakers. Because they were pleased with the performance of the first Bagpakers they bought, every one of these firms bought one or more additional Bagpakers!

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First, superior design and construction provide efficient, economical and trouble-free operation. Second, BAGPAK SERVICE assures continued operating efficiency.

That's why Bagpakers pay for themselves in a hurry—and then keep right on paying bonuses

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IN CANADA: The Continental Paper Products, Ltd., Montreal, Ottawa.

When inquiring check CP 5924 on handy form, pgs. 2-3

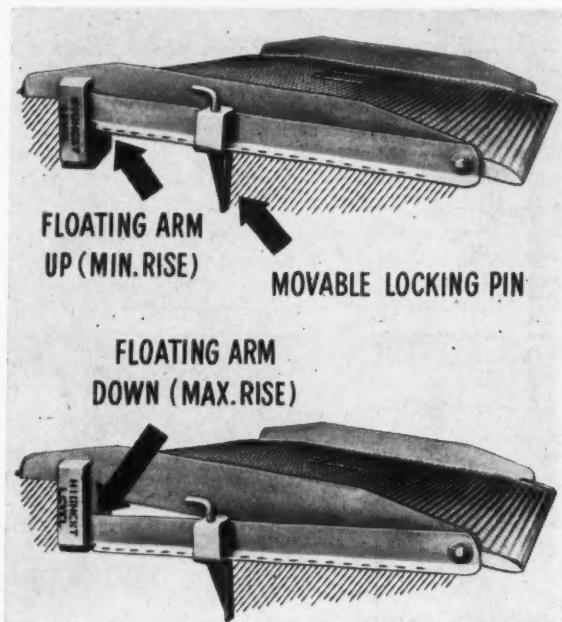
MATERIAL HANDLING

Firm anchoring of loading ramp assured when locking pins are integral with floating arm ...

ramps of 15,000 lb load capacity are easily moved, placed by one man with fork truck

Uses: Designed primarily for use with fork trucks in handling loads at railroad sidings and adaptable for wide range of similar applications.

Features: Locking device of ramp has been improved. The re-designed self-leveling locking device and floating arm offer several advantages over previous locking device.



Ramp locking pin travels along floating arm

In the case of the latter, chain pins were inserted into multi-holed floating arms when the ramp was positioned so that shifting of ramp would be prevented. Now, locking pins are an integral part of the floating arm locking bar which travels back and forth, in its own housing along the floating arm and secures ramp by butting-up firmly against loading platform.

Description: Ramps are made in types and sizes to span gaps from 5 to 58" with differential in height up to 7". Riding surface is non-slip steel plate, reinforced with shock plates at corners. Side stringers add rigidity and act as safety guard. Transported to location between platform and car or trailer, or between similar points on the forks of any lift truck, ramp can be easily set in place. Lift handles drop into place, providing a flush riding surface. Patented sleeve permits the floating arms to rest flat on the lowest or highest levels, for 90° angle bearing of the locking device against the platform.

Source: "One Man Bridge Ramp" is built by the Elizabeth Iron Works, Inc., Dept. CP, PO Box 360, Elizabeth, N. J. . . or for more information, check CP 5925 on handy form, pages 2 and 3.

Unit meters, seals powders

packets of various sizes are filled to predetermined weights at the rate of up to 200 per minute by self-contained unit. Carrying its own rolls of cellophane, foil, paper, or fiberless cotton, the equipment needs only to be connected to feed

hoppers. Many powdered products are accurately handled. Heat sealing is done while material and wrapper pass through rolls.

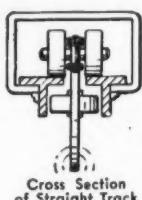
Two-color bulletin illustrates and describes this equipment. "Uni-Pak" is issued by The Sperry Corp., Dept. CP, 2675 University Ave., St. Paul 4, Minn. When inquiring specify CP 5926 on handy form, pages 2 and 3.

**Route of overhead conveyor
includes sharp "up-curves"
and vertical dips . . .**

trolleys are on 12" centers; tendency of chain to rock trolleys avoided

Uses: For use in fabrication, assembly and finishing operations.

Features: Conveyor employs a construction having trolleys with two vertical wheels and a single horizontal wheel, with successive trolleys connected together by a heavy roller chain. Track consists of two spaced parallel T-bars with a vertical wheel carried on each T-bar and the horizontal wheel running between them and in contact with the inside bar on a turn so as to give the chain and trolleys full rolling contact with the track at all times without the aid of roller or traction wheel turns.



Cross Section of Straight Track

On vertical turns, two additional T-bars are placed above the other two and the rollers maintain a full contact between upper or lower sets of bars depending upon whether it is an up or down run. This full rolling contact at all times creates a very low chain pull for a given loading which reduces power consumption, permits lower powered installations to do the work usually requiring higher powered equipment.

Flexible construction permits this conveyor to make sharp turns in both vertical and horizontal directions, to twist around existing obstructions and run from floor to floor. Typical of applications where this space saving is advantageous are paint finishing and degreasing.

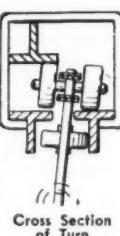
Description: Designed primarily for light to medium loading, trolleys being placed on 12½" centers. Use of ordinary T-bars for track and elimination of roller turns results in lower cost installations.

Load bars may be placed between trolleys to carry double loads or racks may be used to carry large numbers of small items for assembly, spraying, dipping, or curing.

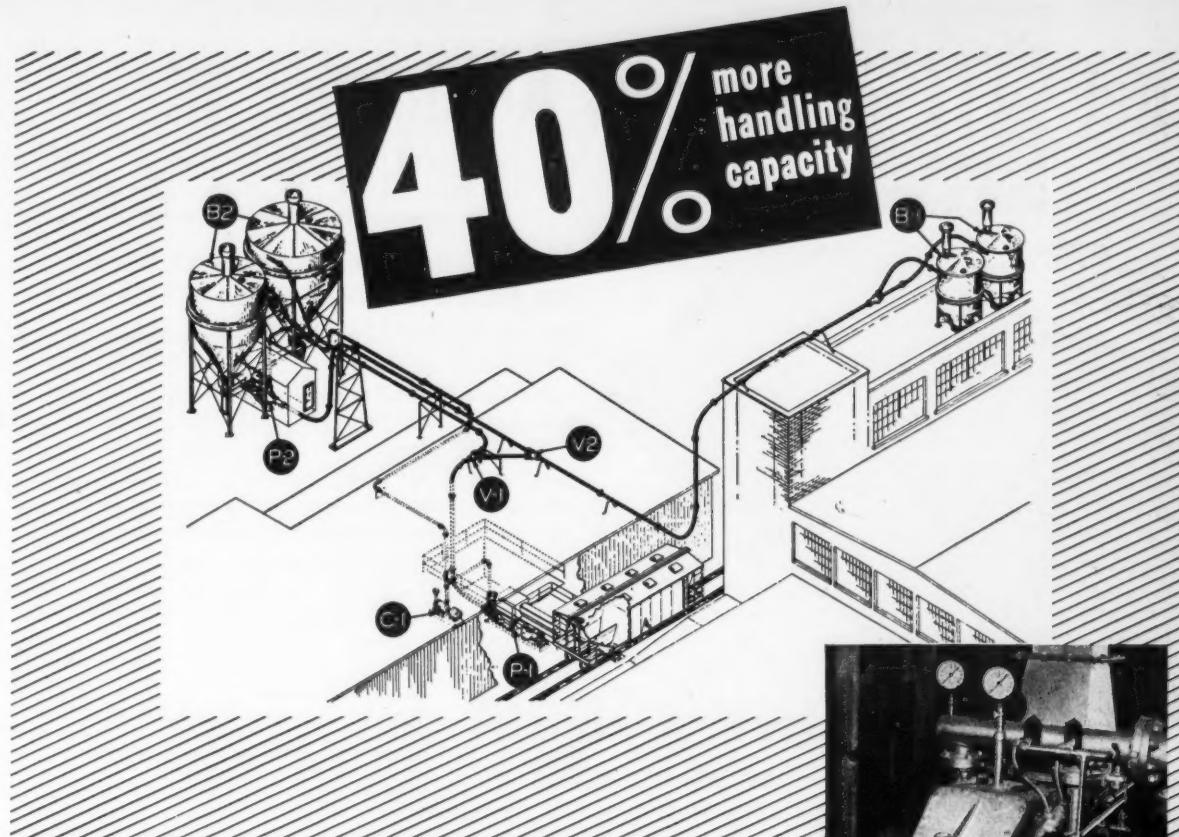
Of related interest is the simple transfer, developed by this same company, for moving loads of all types off of overhead conveyors, and moving the loads up, down or to one side. It also either returns loads to the same conveyor or to some other point. This saves much plant space by eliminating long approaches into tanks and long up runs.

The transfer can take many different forms and can be applied to any chain or table type of conveyor or even belt conveyors. It consists of work carriers of any desired shape supported by load bars which are in turn supported by the conveyor.

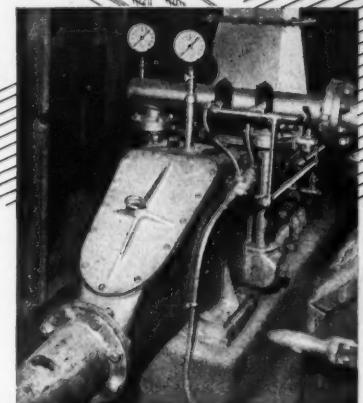
Source: "Econ-o-veyor" and transfer are developments of Shuler Conveyors, Inc., Dept. CP, 43 Hutchinson Place, Lynbrook, N. Y. . . or for more information check CP 5927 on handy form, pages 2 and 3.



Cross Section of Turn



Materials are unloaded (P-1) from hopper-bottom cars to a Fuller-Kinyon Pump, and conveyed through the use of a two-way diverting valve (V-1) and V-2) direct to process bins (B-1) or to reserve storage bins (B-2). A second Pump (P-2) conveys materials from the storage bins to process bins. A Fuller Rotary Single-stage Compressor (C-1), 282 cfm., 25 psi., furnishes the necessary air.



WITH A FULLER-KINYON CONVEYING SYSTEM

Flintkote's asbestos shingle plant at East Rutherford, N. J. uses great quantities of Portland cement and other pulverized material. Unloading and in-plant moving of these raw materials was one of the costliest handling jobs the company had.

That is, until a Fuller-Kinyon Conveying System was installed. Flintkote's been profiting from that investment ever since! Before, three men and a truck driver were needed to

unload one railroad car. **NOW one man controls the whole system.** Before, bulky sacks and skids took up badly needed room. **NOW 3200 square feet of former storage space is available for other purposes.** The new system has increased handling capacity 40 percent . . . nearly paid for itself in just three years!

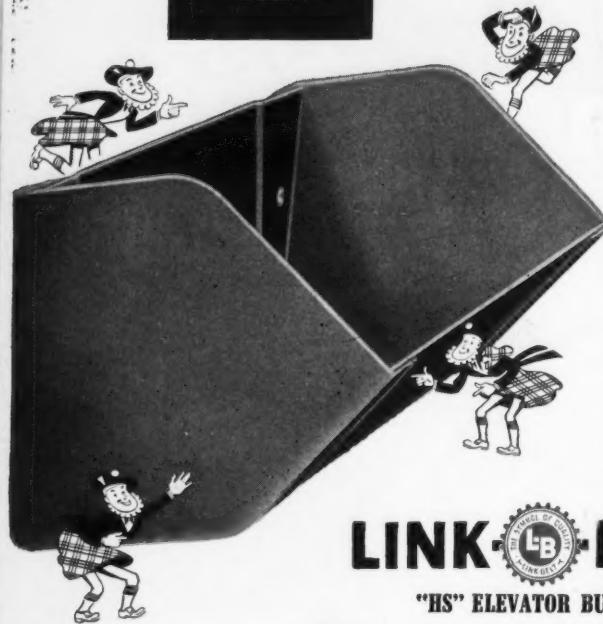
Your plant may be equally adaptable to efficient pneumatic unloading and conveying. Why not have our engineers analyze your requirements . . . recommend the most efficient and economical system. No obligation, of course.

FULLER COMPANY, Catasauqua, Pa.
Chicago 3 • 120 S. LaSalle St.
San Francisco 4 • 420 Chancery Bldg.

fuller
DRY MATERIALS CONVEYING SYSTEMS AND COOLERS
COMPRESSORS AND VACUUM PUMPS
FEEDERS AND ASSOCIATED EQUIPMENT

When inquiring check CP 5928 on handy form, pgs. 2-3

get "HS" buckets for longer life at no extra cost



LINK-BELT
"HS" ELEVATOR BUCKETS

When inquiring check CP 5929 on handy form, pgs. 2-3

LINK-BELT COMPANY: Chicago 8, Indianapolis 6, Philadelphia 40, Atlanta, Houston 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8, Springs (South Africa). Offices, factory branch stores and distributors in principal cities.

12,386

The next time you buy buckets, be sure you get this advanced design by LINK-BELT

LINK-BELT "HS" Buckets give you the ultimate in centrifugal discharge bucket elevator operation . . . at either high speeds or nominal speeds. High bucket ends minimize spillage. Low front lip provides efficient pick-up.

And "HS" Buckets last longer: Bucket ends, same gauge as body, are folded over body for added strength and rigidity. Back of bucket is crimped for end fold, giving smooth, flat back surface contact. Smooth interior permits quick, clean pick-up and discharge.

Best of all, "HS" Buckets' longer life means lower overall costs for you. For complete information, write for Book 2299.

MATERIAL HANDLING

Self-centering action of clamp keeps truck stable, in picking up, transporting loads . . .

variable clamping pressure permits handling fragile containers or heavy drums

Uses: Enables fork trucks to pick-up and transport bales, bins, drums and miscellaneous containers. Loads are picked-up and carried in centerline of truck.

Features: Many conventional clamps and grabs, of a similar nature, do not have synchronized movement of arms in opening and closing, making it difficult to carry



Clamp handles bales, bins, drums up to 6,000 lb

loads, unless the truck is lined up perfectly with the centerline of the load. The off-center loading, that may result, tends to make trucks unstable, particularly when clamp and load are rotated.

When used with a rotator this recently developed self-centering clamp does not creep off center. Loss of pressure grip in arms is minimized. A variable clamping pressure permits handling any type load, such as fragile cartons, heavy containers, bales and boxes.

Description: Self-centering arms have an inside opening range from 17" minimum to 66" maximum. Clamp handles loads up to 6,000 lb and can be installed on gasoline or electric trucks.

Source: Self-centering rotating clamp is a development of Yale & Towne Mfg. Co., Dept. CP, Philadelphia Div., 11,000 Roosevelt Blvd., Philadelphia 15, Pa. . . . or for more information check CP 5931 on handy form, pages 2 and 3.

Battery powered conveyor system used indoors or out-of-doors without power lines . . .

monorail power unit is controlled by walking operator or from remote control station

Uses: Conveyor system can be used for transporting material around plant, or between buildings. Also used as production line.

Features: Since battery power is used, the manual control type needs no electrical connections that might cause maintenance troubles.

Description: Mono-Dyne self-powered unit is easily incorporated into conventional manually powered systems. The battery unit is capable of multiple speeds, forward and reverse, and is capable of ascending grades.

Robinson *Air-Activated* Conveyor

The Low-volume Air Conveyor

Averages 1 Cubic Foot of Air per Pound of Materials Handled

Right here is one reason — and a stand-out reason — why the Robinson Air-Activated Conveyor is so economical in handling bulk dry-pulverized and fine-granular materials. Compressed air costs money so, if you can hold air costs down, as with the Robinson, you keep handling costs down. And no other power is necessary to operate a Robinson System.

The reason why the Robinson System can operate with such low air volume is due to the fluidized nature of the charge when transported through the pipes. Pressure alone will not suffice. It requires this Robinson Air-Activation or fluidizing effect. Material "flows" rather than blasts through.

Many Robinson Systems are in service handling a variety of products and in some cases are transporting them several thousand feet. This system may be just what you need for handling those dry, bulk materials in your plant. It has several outstanding features which we'll be glad to discuss at your convenience.



A Division of
Morse Boulger Destructor Co.

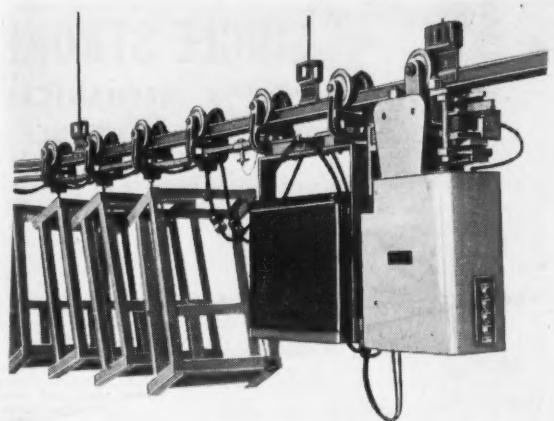
CONVEYOR SYSTEMS

ROBINSON

Representatives in Principal Cities

211-V EAST 42nd ST. • NEW YORK 17, N. Y.

When inquiring check CP 5930 on handy form, pgs. 2-3



Monorail conveyor showing manual controls at lower right

Economy of installation is a result of the lack of overhead wiring. Manufacturer reports that the unit can be used for production line work as well as general materials handling.

Descriptive bulletins on the Mono-Dyne are available.

Source: The Bloom System, Inc., Dept. CP, 19431 West Davison Ave., Detroit 23, Mich. . . . or for more information check CP 5932 on handy form, pages 2 and 3.

Assembling 5,000-lb handling box takes only few seconds . . .

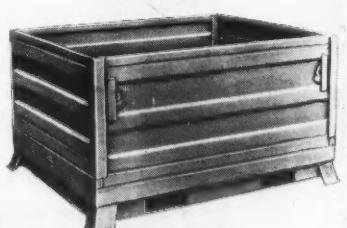
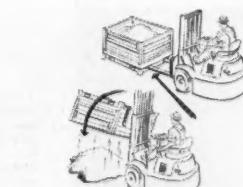
prongs of trucks can pick up box from any side and invert it completely for quick dumping

Uses: For handling and dumping various materials with lift trucks; box's maximum load capacity is 5,000 lb.

Features: Can be collapsed, or erected, in less than 20 seconds. Box is completely self-contained and has no loose pins or parts. Reinforced guide holes on all four sides permit entry by prongs of fork truck. Box can be completely inverted without slipping from truck.

Description: Built of heavy gauge corrugated steel, assembled box is held in erect position by a safety lock with a safety catch. Leg design includes a small table on the inside to permit stability in stacking.

Box folds down to a collapsed height of less than 10", permitting several boxes to be stored in the space that would be occupied by one conventional box.



Corrugated steel 5,000-lb dump box

Source: Model B-50-F collapsible "Phil-Box" is a product of Phillips Mine & Mill Supply Co., Dept. CP, 2339 Jane St., Pittsburgh 3, Pa. . . . or for more information check CP 5933 on handy form, pages 2 and 3.

**SPROUT
WALDRON**
MUNCY, PA.

pointers

to

**BETTER
PROCESSING**

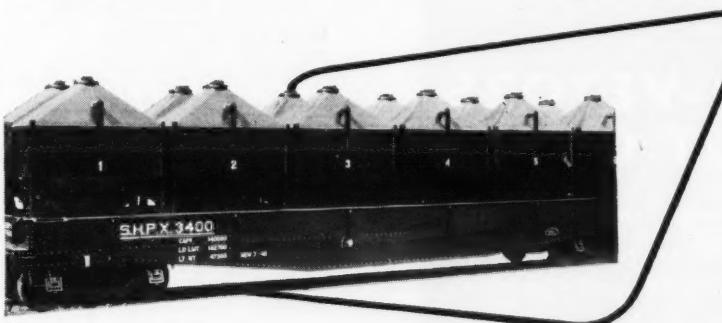
EQUIPMENT INFORMATION FOR PROCESSING PLANTS

Streamlined Materials Handling of Bulk Chemicals



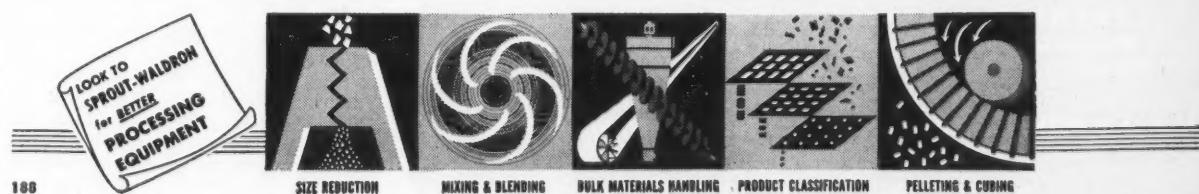
For years calcium carbide, used in acetylene and synthetics, was shipped in 1000 lb. steel drums. Loading a shipment of carbide was slow, arduous work, eating up plenty of man-hours. Depreciation on drums due to rough handling was especially high. And, loss through spillage was an evil accepted by both manufacturer and consumer.

The growing demand for carbide by large industrial users necessitated a more efficient, economical method of handling carbide in bulk.



For further information about this equipment write to Sprout, Waldron & Co., Inc., 15 Waldron St., Muncy, Pa.

Sprout-Waldron
Manufacturing Engineers
SINCE 1866
MUNCY • PENNSYLVANIA

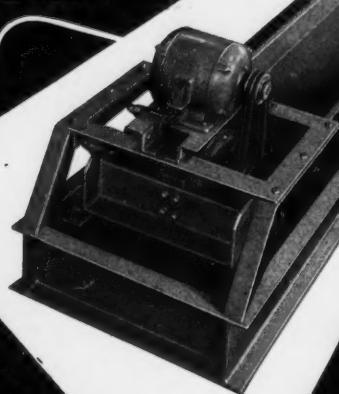


188

LOOK TO
SPROUT-WALDRON
for BETTER
PROCESSING
EQUIPMENT

When inquiring check CP 5934 on handy form, pgs. 2-3

Never underestimate your cost of material handling by old fashioned methods



You undoubtedly buy the finest production machinery that is made. However, production and cost accounting authorities agree that the most important way to effect savings today is to effect economies in materials handling.

Regardless of whether you measure in pounds, tons, dollars or all three, material handling cost is one of today's most serious problems of business in general and your business in particular.

HOW **AJAX** LO-VEYORS CUT COSTS

Exclusive Ajax Lo-Veyor design is responsible for low cost handling of bulk materials and equally important low maintenance cost,—and here's why:

1. Only three basic parts — pan or tube . . . vibrating mechanism . . . motor.
2. Completely self-contained — ready for use.
3. No exposed bearings, no eccentric shafts, no idler and tail pulleys.
4. Pan or tube made of ferrous or non-ferrous metal.
5. Covered pan or tubular Lo-Veyors provide gas-tight construction for critical processes and explosive operations.

Used by leading chemical, food, foundry and other manufacturers.

Write giving outline and sketch of your requirements for handling dry materials.

AJAX FLEXIBLE COUPLING CO. INC.

WESTFIELD, N. Y.

When inquiring check CP 5935 on handy form, pgs. 2-3

MATERIAL HANDLING

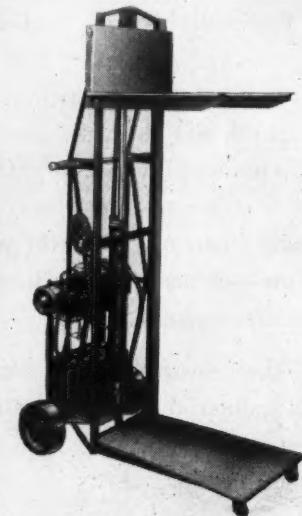
Off-hour recharging keeps stacker battery at full strength . . .

activates motor to operate hydraulic lift

Uses: For lifting loads of up to 750 lb to maximum loading height of 55" and quickly moving and stacking them.

Features: Battery activated motor mechanism operates hydraulic lift. What little drain is placed on battery under capacity use is replaced by built-in charger during off-hours.

Description: Combination forklift stacker is equipped with hy-



Battery operated stacker

draulic lift which elevates loads to maximum height in 6 seconds. Stack-er platform is 21 x 18". Unit moves on large load wheels in back and swivel casters at the front.

Source: Combination forklift stacker and hand truck is built by Clark-Hopkins Equipment Corp., Dept. CP, 1124 Spring Garden St., Philadelphia, Pa. . . . or for more information check CP 5936 on handy form, pages 2 and 3.

Redesign stops binding — wheels cannot touch sagging load . . .

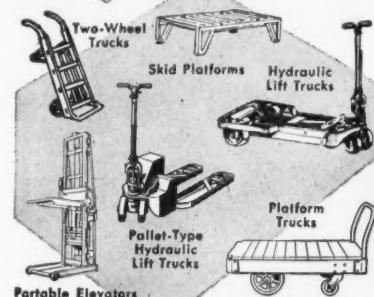
magnesium alloy hand truck weighs only 19 lb

Uses: Light hand truck can be used for moving packages, large or small, or for loose or flexible loads like bags, coils of rope, etc.

Features: Two wheel truck has vertical metal stop extending beyond wheels on each side to prevent load



Weld-Bilt Products Include:



319 Water St., WEST BEND, WIS.

When inquiring check CP 5937 on handy form, pgs. 2-3



DO YOU HAVE A SIMILAR PROBLEM?

Note the time, effort and space that can be saved by installing a Screw-Lift to elevate your free-flowing bulk material.

You can use a Screw-Lift in many different ways — at the receiving department of your plant or the shipping end. You can use it for conveying to storage or to reclaim from storage. You can use it to carry materials to baggers or into process. And, it will synchronize with your flow.

It's a screw within a tube. Clean, dust-less, moisture-proof and sanitary . . . flexible for easy installation without disrupting your plant.

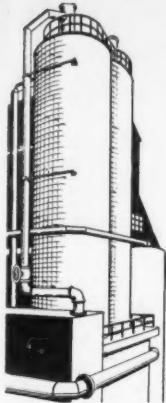
Write today for Analysis Form M-500-2.



Screw Conveyor Corporation
699 HOFFMAN ST. HAMMOND, IND.
ENGINEERS MANUFACTURERS
TRADE SHOW ROOMS P. O. BOX 600

When inquiring check CP 5938 on handy form, pgs. 2-3

CHEMICAL PROCESSING



formula for profit

MARIETTA DESIGNED AND BUILT STORAGE SYSTEM

Install a Marietta storage system. Fill with chemicals that need air-tight, moisture-proof storage. Add the advantages of wind and fire proof tanks constructed of Air-Cell concrete staves for strength and BONE DRY storage. Subtract high insurance rates, less spoilage and waste... thanks to safe, dependable Marietta tanks.

the result? A modern storage system that eliminates maintenance, provides permanent, year 'round protection for all your bulk materials requiring storage, lowers handling costs.

To learn how you can have a complete system designed and erected to meet your needs, write or wire our nearest office.

THE MARIETTA CONCRETE Corp.

MARIETTA, OHIO

Branch Offices: Race Road and Pulaski Highway, Baltimore, Md.
Box 1575, Charlotte, N. C.

When inquiring check CP 5939 on handy form, pgs. 2-3

FOR LOWER STORAGE COSTS

SPECIFY

Kalamazoo GLAZED TILE



You practically eliminate maintenance problems and costs when you store bulk materials such as coal, gravel, and sand in tanks and silos made of Kalamazoo Glazed Tile. Far superior to concrete — easy to clean — cannot contaminate contents. For a permanent low-cost installation, specify Kalamazoo Glazed Tile.

WRITE FOR COMPLETE FACTS

Kalamazoo TANK AND SILO COMPANY

732 Harrison Street • Kalamazoo, Michigan

When inquiring check CP 5940 on handy form, pgs. 2-3

MATERIAL HANDLING

from sliding or sagging back to the point where it would bind wheels.

Description: Magnesium alloy construction cuts weight to only 19 lb. Two vertical frame members spaced in truck cradle prevent small packages from falling. It handles easily on quiet rubber wheels.

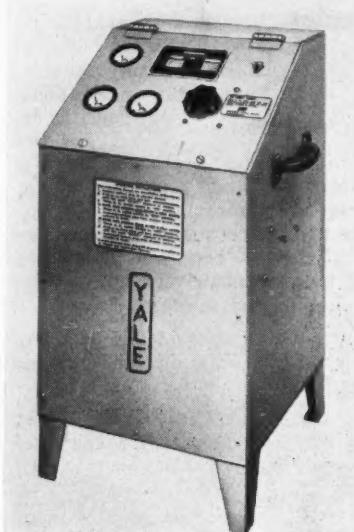
Source: Magliner hand trucks are available from Magline, Inc., Dept. CP, Pinconning, Mich. . . or for more information check CP 5941 on handy form, pages 2 and 3.

Automatic controller regulates amount, time of battery charge . . .

no moving parts in charger for industrial truck batteries

Uses: For industrial battery charging requirements up to 55 ampere capacity.

Features: Operates on selenium rectifier principle and utilizes automatic controller. This governs



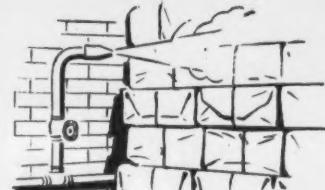
Charger has dual clock control

amount and time of charge. Design involves no moving parts. Extra large plate area obviates need for a fan and there are no commutators or brushes requiring attention.

Description: Available for either lead-acid or nickel-alkaline batteries. Plugs into any standard 110/115 volt 60 cycle outlet. No special wiring is necessary. A step-down transformer is furnished for 220 volt outlets.

Source: Yale & Towne Mfg. Co., Philadelphia Div., Dept. CP, 11,000 Roosevelt Blvd., Philadelphia 15, Pa. . . or for more information check CP 5942 on handy form, pages 2 and 3.

NO. 1 OF A SERIES ON HOW TO Stretch a MULTIWALL Paper Bag

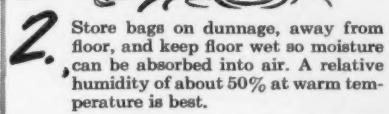


Let steam escape in bag storage room to keep air and bags humid. Keep a humidity indicator in the storage room and check it frequently. Always leave aisles or spaces between stacks of bags to allow circulation.

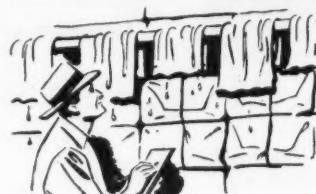


Kraft paper supplies are short. So it is important for you to get the best use from your multiwalls. Here is one way to stretch them . . .

Proper Storage of Empty Bags —Keep Storage Rooms Humid: Here are 6 Ways to Do It.



2. Store bags on Dunnage, away from floor, and keep floor wet so moisture can be absorbed into air. A relative humidity of about 50% at warm temperature is best.



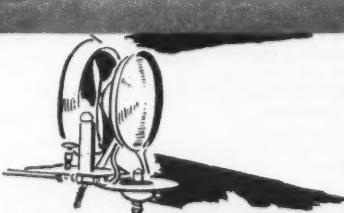
3. Drill small "needle" holes in horizontal water pipes. Hang cloths over holes. Air absorbs moisture from wet cloths.



4. Hang wet cloths over edge of water barrels. Cloth absorbs water and air absorbs moisture from cloth. Keep barrels well filled.



5. Open windows on damp or rainy day. Damp outside air will circulate in the bag storage room. Multiwalls are strongest when moisture content of the paper is about 6 or 7%.



6. Use commercial humidifying apparatus. Many types of commercial humidifiers are available with capacities to suit individual requirements.

Want the Whole Story?

Ask your Bemis Man for free, illustrated copy of Bemis Multiwall Packaging Guide. It deals with Storage, Filling and Closing, Handling, Palletizing and other important subjects.

• • •
Maybe Cotton Bags are Your Answer . . . if you can't get all of the multiwalls you need. Cotton bags are available . . . and Bemis is the leading cotton bag source.

Bemis



St. Louis 2, Missouri

When inquiring check CP 5943 on handy form, pgs. 2-3

Tape-Bound Closures for Multiwall Paper Bags!

LOW-COST SECURE FAST

UNION SPECIAL Style 21800 H Bag Closing Machines, with Style 80600 H sewing heads, shown here, are heavy-duty, high production units for making low cost tape-bound closures on large multiwall paper bags.

A single foot pedal controls synchronized conveyor and sewing head. Automatic tape cutter on sewing head saves time and helps make operation smooth and easy to learn.

Sewing head and conveyor are quickly adjustable for varying bag heights and scale or platform height from floor. Entire unit is ruggedly built for dependable service in high-volume production.



Ask for a copy of this Bulletin

It's easy to find just the right unit to meet your individual needs in Union Special's big line of bag closing machines. Twenty-five different styles of machines! Ten styles of sewing heads! Wide choice of conveyors, controls, and types of closures. Ask for a copy of Bulletin No. 200, "UNION SPECIAL FILLED BAG CLOSING MACHINES."

Union Special MACHINE COMPANY
442 N. FRANKLIN STREET, CHICAGO 10, ILLINOIS

When inquiring check CP 5944 on handy form, pgs. 2-3

Page 50

MATERIAL HANDLING

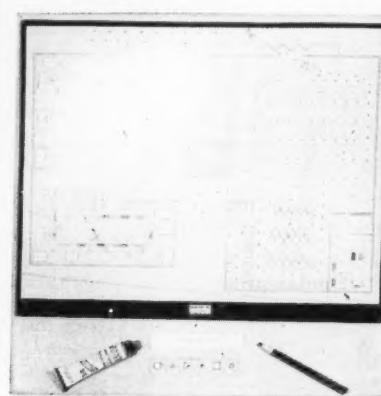
Plotting material handling flow on planning board reveals best design for each plant . . .

scaled templates, colored strips quickly arranged to simulate actual installations

Uses: For analysis and planning of material handling systems. Aid in making diagrams, in studying current practices. Scaled templates and other component parts facilitate accurate reproduction, in miniature, of present or projected set-ups.

Features: Quickly visualizes flow of materials. Over 900 templates are provided to represent equipment and personnel.

Description: Unit comprises tools and planning aids for making flow diagrams. Plastic-surface planning board is marked-off in $\frac{1}{4}$ squares. In addition to scaled templates, colored strips are provided for indicating boundaries of buildings, storage areas, roadways and lay-down areas. Also furnished are a dual-station method engineering ruler and plastic-marking pencil. Included, are two



Board with diagram completed

instruction books. One describes proper method of preparing flow diagrams; the other gives step-by-step directions for analyzing and improving material handling methods. Latter covers such questions as material handling routes, best types of handling equipment, economical storage patterns, adequate clearances, safety measures, cross traffic and related subjects.

Size # 1 planning unit is for maximum floor areas of 80 x 112'. Sizes 2 and 3 are for areas of 144 x 192 and 192 x 288' respectively.

Source: Triometric, Inc., Dept. CP, 711 Penn Ave., Pittsburgh, Pa. . . . or for more information check CP 5945 on handy form, pages 2 and 3.

Kit contains parts needed in assembling, placing spur conveyor line . . .

allows temporary spurs to be set up quickly and easily on 18-inch wide conveyor

Uses: Where materials must be diverted from the regular conveyor line for storage, or similar purposes.

Features: Lightweight aluminum parts can be quickly and easily assembled to fit 18" wide conveyors with 16 or 18 wheels per ft.

Description: Flow Diverter kit is made up of a connecting yoke fastened to a 3-ft section of aluminum "Rapid-Wheel," a slotted aluminum diverter plate having conveyor wheels projecting slightly above the surface, and an adjustable curved aluminum guard rail. To set up a spur line, the connecting yoke bracket is hooked over the side frame of the permanent conveyor, and a support stand is placed under the opposite end of the 3 ft aluminum

Save time! Prevent accidents!

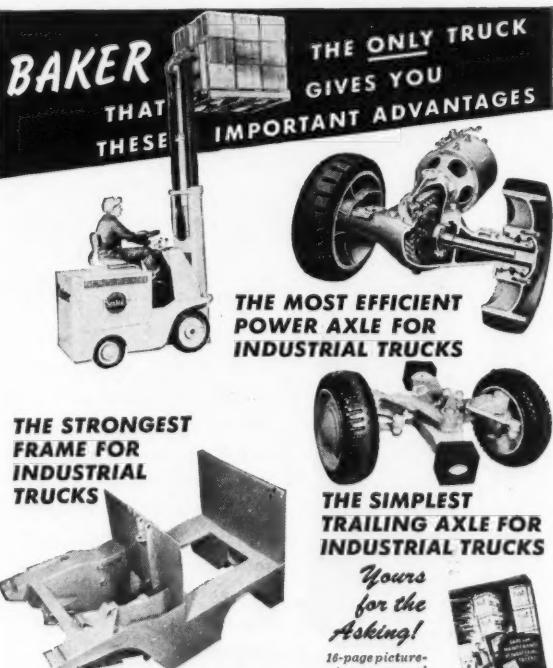
UFT AND DUMP
MECHANICALLY

REDUCE HANDLING COSTS with a Cesco Dumper. It handles up to 100 loads per hour; has a lifting cap, ranging from 100 to 1500 lbs. Both single- and multi-purpose portable models are built in standard dumping heights from 5 to 12 ft. Stationary models up to 16 ft. dumping heights. Push button controlled. Write for catalog.

COLSON EQUIPMENT & SUPPLY CO.
1317 Willow Street • Los Angeles 13, California



When inquiring check CP 5946 on handy form, pgs. 2-3



BAKER INDUSTRIAL TRUCK DIVISION of The Baker-Raulang Company
1208 West 80th Street, Cleveland 2, Ohio

Baker INDUSTRIAL TRUCKS

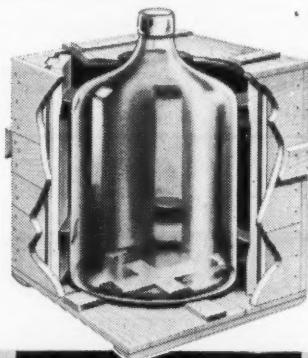
When inquiring check CP 5947 on handy form, pgs. 2-3

CHEMICAL PROCESSING

HERCULES CARBOY BOXES

give you
**EXTRA
PROTECTION**

These sturdy all wood boxes, with interchangeable cork (Hercules) or rubber cushion (Aero) inserts, give all point protection and reduce bottle breakage. They're easy to handle, eliminate the need for foreign filler materials, and reduce occupational hazards.



13 GALLONS

SPECIFICATIONS

SIZE: 17 1/2" x 17 1/2" x 22" (I.D.)

WEIGHT: Approx. 45 lbs. without bottle.

CARBOY: 13 Gallons.

Available also in 5 gallon, 6 1/2 gallon and other capacities.

COMPLIES WITH CLASSIFICATION
I.C.C. 1-A.

For
Information
write to
Dept. P

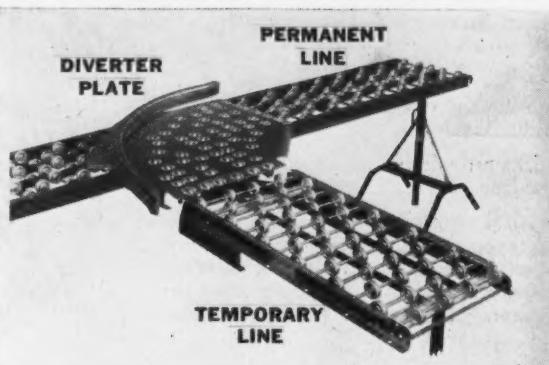
**PROMPT
DELIVERY**

**NATIONAL
BOX & LUMBER COMPANY**
NEWARK 5, NEW JERSEY



When inquiring check CP 5948 on handy form, pgs. 2-3

MATERIAL HANDLING



Spur line may be quickly attached for feeding to or taking from permanent conveyor

wheel section. Diverter plate is then placed on the permanent conveyor. Cartons may then be transferred from the permanent line to the spur, or from the spur to the line. Gravity sections may, of course, be added to the spur.

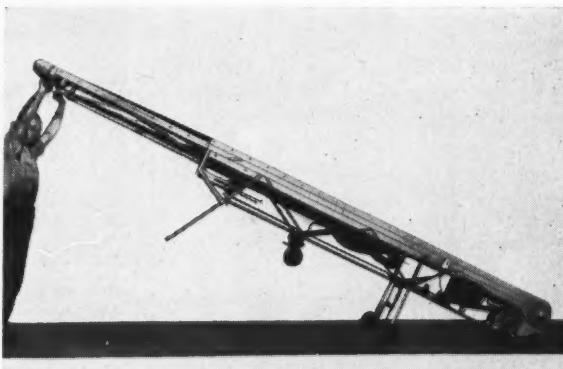
Source: Made by the Rapids-Standard Co., Inc., Dept. CP, Grand Rapids 2, Mich. . . or for more information check CP 5949 on handy form, pages 2 and 3.

**Adjustability plus light weight
gives mobile conveyor wider
range of service . . .**

14" belt rides on 18 1/2" bed permitting unit to carry loads wider than belt width

Uses: Easily adjusted to meet constantly changing requirements in loading, unloading, stacking and other handling operations. Designed to carry maximum unit loads of 300 lb and total load of 850 lb.

Features: Can be raised, lowered or extended to stack to a height of 10' at a maximum angle of 30°. Completely counter-balanced for easy handling by one man.



Conveyor is counter-balanced for easy handling

Description: Mobile, adjustable conveyor has a 14" wide rough top rubber belt riding on a ball bearing mounted roller bed. Unit measures 10' closed and 17' 6" fully extended. Weight, completely assembled, is 625 lb. Drive is by 1/2 or 3/4 hp motor.

Source: Lightweight Adjustovveyor is built by Stewart-Glapa Corp., Dept. CP, Zanesville, Ohio . . . or for more information check CP 5950 on handy form, pages 2 and 3.

**TROUBLED WITH
CLOGGED
SUCTION LINES?**
in flotation system



**In MORRIS
Type R Slurry Pumps
SUCTION LIFT HELPS
REMOVE OBSTRUCTIONS!**

A Morris Type R is capable of operating under suction lift . . . positive head not required! This design feature lets atmospheric pressure do its work — and in many instances it's sufficient to clear the stoppage. Shutdowns and dismantling of pipe lines are greatly reduced.

And when there are cases calling for pump dismantling, the job is relatively simple with Morris Type R. By loosening four bolts, off comes the end cover — and you can take a quick look at the inside. Unscrew the impeller, if necessary. But you don't have to disturb the pipe line at all.

Small wonder Morris Type R is so popular. Flow is maintained so reliably throughout the range from heavy slurries to foaming slurries, that a lot of operating problems are answered. Get the full story of this many-feature pump. Write for Bulletin 181.

MORRIS MACHINE WORKS Baldwinsville, N.Y.

Branch Offices in Principal Cities

MORRIS

Centrifugal Pumps

When inquiring check CP 5951 on handy form, pgs. 2-3

Is your bag packer ringing the bell?



Are your bag packers taking a *beating*? Have they enough capacity? Are you nursing baggers that can't take it and don't dish it out? Is your production hobbled by tired equipment?

Right now you, like everyone else, are probably faced with the problem of increased production... trying hard to get the last ounce of performance out of your equipment. The chips are down and equipment manufacturers' claims must be translated into on-the-job performance. If you are not satisfied in every detail with your bagging equipment, you'd better take stock and plan for improvements and replacements—

THAT'S WHERE STOKER MODEL 1-5 BAG PACKERS FIT THIS PICTURE

DESCRIPTION—Stoker Model 1-5 Bag Packers are designed to fill valve bags with a wide variety of granulated or powdered materials. These packers include many features not found in conventional bag fillers. Stoker Packers are fully adjustable to accommodate different bag sizes—the same machine may be used on a number of materials—rate of flow is easily controlled—positive force feed in both hopper and filling nozzle puts the material in the bag exceptionally clean and free from dust and blow—the ribbon agitator in the hopper eliminates bridging—and, Stoker Packers will pack predetermined weights within ounces.



U. S. Patent No. 2,548,075. Other Patents Pending.

APPLICATIONS—Stoker Model 1-5 Bag Packers are now being used successfully in commercial operations handling these materials: Sulfur, pulverized coal, clays, sugar, cottonseed meal, malt, yeast, cellulose gum, doughnut flour, rosin, paint pigments, asbestos, some plastics, titanium, alfalfa meal, insecticide dusts, certain fertilizers and many other hard-to-handle materials... AND, STOKER MODEL 1-5 PACKERS DO IT AT THE APPROXIMATE RATE OF ONE CUBIC FOOT IN FIVE SECONDS.



H. L. STOKER CO.

111 SOUTH COLLEGE AVENUE, CLAREMONT, CALIFORNIA

When inquiring check CP 5952 on handy form, pgs. 2-3

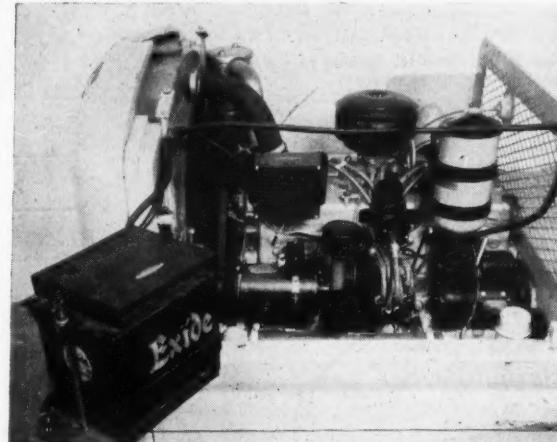
MATERIAL HANDLING

Spark-enclosed protection now provided for gasoline fork trucks . . .

designed for maximum possible safety operation in gas and dust laden areas

Uses: Designed to provide the maximum safety possible in gas and dust laden areas.

Features: Electrical equipment is shielded against sparking. Has water-type exhaust manifold, water-cooled muffler, and static conductive tires. Fuel tank is heavy welded steel construction, surrounded by strong structural members as protection against rupture. A special filler



Gasoline truck has spark-enclosed protection

cap, which seals automatically, is shielded from engine compartment so overflow can't drop on electrical system or hot engine parts.

Fuel lines are copper tubing. Gasoline filter bowl is all-metal. It withstands prolonged and severe vibration.

Description: It is not maintained that this equipment is explosion-proof. However, truck has Underwriter's approval as spark-enclosed.

Exhaust manifold has a water jacket designed to keep exhaust system and engine surface temperature low. Muffler is a water type which quenches sparks in the exhaust by directing them against a water spray. Even in the event that water is left out of the muffler, spark arrest is still effective.

All high tension wires are enclosed in a flexible metal tubing that is grounded wherever wires pass through metal surfaces. Spark plugs are enclosed to prevent possibility of sparking between terminals and plug bases due to moisture or dust.

Generator, starting motor and relays are totally spark-enclosed. Cover over terminal posts prevents accidental sparking from tool or metal object. High tension coil, voltage regulator and distributor are also totally shielded.

Battery terminals are protected by an insulated cover to prevent a short due to contact of metal tool or upsetting the battery. Instrument panel, including starter button, is enclosed. Horn is standard spark protected electric horn. Static conductive tires are used to prevent a static discharge between truck and floor.

Source: Spark-enclosed gasoline truck is a development of Yale & Towne Mfg. Co., Philadelphia Div., Dept. CP, 11,000 Roosevelt Blvd., Philadelphia 15, Pa. . . . or for more information check CP 5953 on handy form, pages 2 and 3.



An ordinary truck requires two or three men to pick up and move barrels and drums up to 800 pounds.

ONE-MAN BARREL AND DRUM TRUCK

SIMPLE TO OPERATE. Just run truck up to container, hook on at top and pull back on handle to pick up load. Exclusive **Third Wheel Feature** ensures better balance and added safety in moving loads.

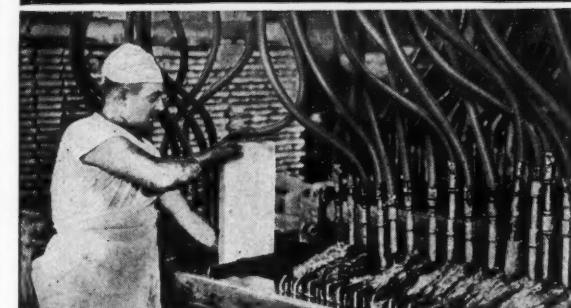
WRITE FOR BULLETIN NO. 48-A

THE SABIN MACHINE CO.
6534 Carnegie Avenue
CLEVELAND 8, OHIO

With a Sabin Type "L-3" Truck, ONE MAN does the same job with ease. You save time and cost of helpers.

When inquiring check CP 5954 on handy form, pgs. 2-3

HANDLING ACIDS?



HERE'S THE ANSWER!

Specify Hewitt-Robins Monarch brand Acid Hose . . . it does a better job.

Its specially compounded rubber inner tube safely carries arsenic, citric, gallic, hydrochloric, phosphoric and tannic acids in *any* concentration... most other acids and alkalies up to half strength.

For concentrations up to 50%—except sulphuric, tannic and phosphoric acid—

the right hose is Monarch Acid Suction. And for pinch valve service on acid discharge lines, it's Monarch Acid Pinch Valve Hose.

For full details, write Hewitt Rubber Division, 240 Kensington Ave., Buffalo 5, N. Y.

HEWITT-ROBINS

ACID HOSE

HEWITT-ROBINS



INCORPORATED

When inquiring check CP 5955 on handy form, pgs. 2-3

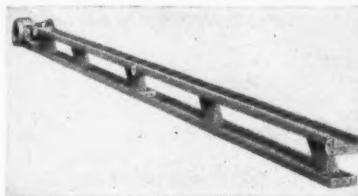
CHEMICAL PROCESSING

**Materials move smoothly
in uniform flow within
oscillating trough . . .**

motion imparted by constant stroke eccentric

Uses: Handles loose bulk materials at moderate capacities. Typical applications include chemicals, coal, crushed stone, gypsum, kiln discharges, lime (pebble and ground), steel and wood chips, sawdust and silica sand.

Features: Operating principle achieves movement of very hot, sharp, jagged or oily material with



Conveyor oscillates gently

virtually no wear on metal troughing. Construction offers advantages where cleanliness, contamination or corrosion are important considerations. Escape of dust or gases can be eliminated by addition of a metal cover, with flexible connections, at loading and discharge points.

Description: Oscillating conveyor embodies a one-piece metal trough with high sides, supported on simple one-piece flexible members which function as springs in absorbing the energy of the trough movement at each end of the stroke.

Conveyor trough is normally 4" deep and can be furnished in standard widths of 8 to 24". Made of 10 or 12 gauge steel, stainless or corrosion resisting steel, or other special material. Motion is imparted to trough by a roller-bearing constant-stroke eccentric. Uniform, continuous flow of material is assured.

Conveyor is very compact. Troughs in lengths of up to 100' can be furnished. Dividers can be installed to convey several materials simultaneously. Discharge is possible at any point.

Source: "Flexmount" conveyor is built by Link-Belt Co., Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. . . or for more information check CP 5956 on handy form, pages 2 and 3.

For more information in product advertised at right, specify CP 5957 . . . see information request blank between pages 2-3.

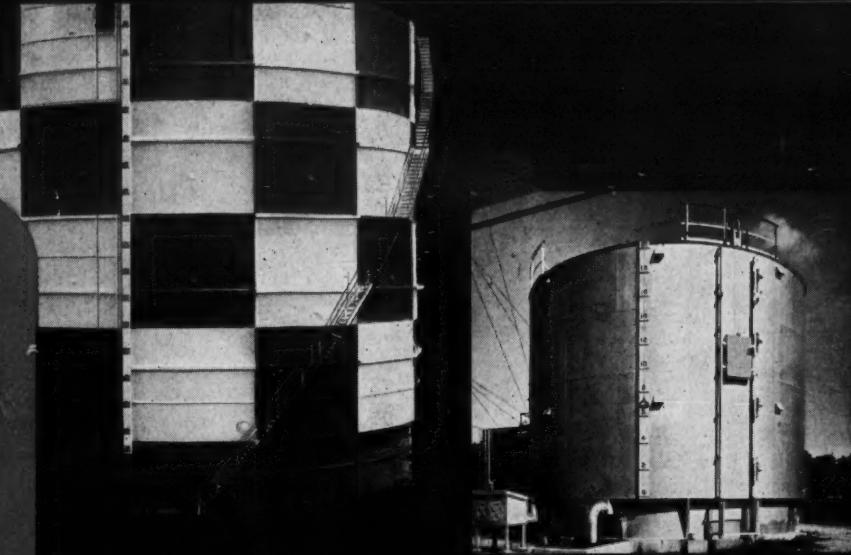
500

Wiggins Gasholder

installations
in the 3 years
since introduction!

Operates at pressures up to 20" of water. Gas tightness and impermeability of Wiggins dry seal proved in 15 years' service under actual operating conditions. Ask about converting your present gasholders to Wiggins principle.

WRITE FOR NEW BULLETIN WG-22
OR REFER TO BUILDER'S COMMITTEE REPORT
(May, 1951), AMERICAN GAS ASSOCIATION

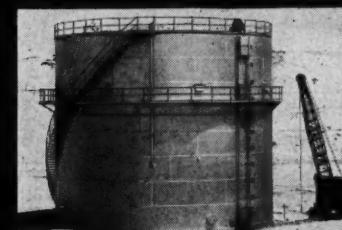


no doubt about it . . . simplified Wiggins design is a better way to store industrial and chemical process gases

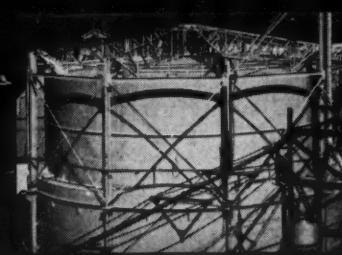


it's the **only**
gasholder
that uses

**NO WATER
TAR
GREASE**



it's the **only**
gasholder with
**AN ABSOLUTELY
DRY, FRICTIONLESS
SEAL**



Converted from old style!

it's the **only**
gasholder
that assures
**NO
WEATHER WORRIES
OPERATING COSTS
MAINTENANCE PROBLEMS**



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Transportation Corporation

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New York • Plants: Birmingham, Ala.—East Chicago, Ind.—Sharon, Pa.

*Now
off the Press!*

BENEFITS from NEW HIGH SPEED MIXER

Homogeneous Mixing Now is Obtained in Faster Time . . . at Less Cost . . . with the "ENTOLETER" Mixer.

The "ENTOLETER" Mixer is a new-type centrifugal machine designed to provide thorough mixing and blending . . . in faster time . . . at reduced cost. In actual manufacturing operations in the chemical industries, this equipment is producing amazingly uniform mixtures, simply and economically.

Continuous Mixing

The "ENTOLETER" Mixer produces a finished mixture at rates up to 250 pounds per minute. Where ingredient percentages in a formula are sufficiently large to allow accurate metering, a truly continuous operation is achieved.

Adaptable to Batch System

The "ENTOLETER" Mixer is easily incorporated in the processing system as a final mixer. It serves to shorten mixing time, with consequent savings and appreciable improvement in product quality.

SEND TODAY FOR YOUR COPY OF THIS NEW, INFORMATIVE BULLETIN — ILLUSTRATING AND DESCRIBING SOME OF THE ADVANTAGES OF HIGH SPEED CENTRIFUGAL MIXING.

ENTOLETER DIVISION

The Safety Car Heating and Lighting Co., Inc.
1185 Dixwell Avenue, New Haven 4, Conn.

Forty-one-page report includes extensive operating data and analyses in connection with continuous lab process using coal, oxygen

Development of one of the first laboratory processes for continuous production of synthesis gas from pulverized bituminous coal is described in a 41-page Bureau of Mines report. The process offers an easily controlled method for testing the gas-making qualities of various types of fuels. Synthesis gas — a mixture of carbon monoxide and hydrogen — required for manufacture of synthetic liquid fuels is a product of coal gasification, which is the first basic step for the indirect Fischer-Tropsch process for producing such fuels. In its pages,

Table I Typical Operating Data and Results

Type of coal gasified	Run 33A High Volatile	Run 49 Low Volatile
Size of coal, % through 200 mesh	Wyoming No. 9	Sewickley
Duration of run, hr	91.1	89.1
Rate of coal feed, lb/hr ¹	1.10	3.20
Oxygen input, cft ²	15.9	37.5
Steam input, lb/hr ³	123.1	284.0
Oxygen-to-coal ratio, lb/lb dry, ash-free coal	.72	.75
Steam-to-coal ratio, lb/lb dry, ash-free coal ⁴	.725	.746
Output of synthesis gas, cft	.050	.023
Oxygen input, cu ft/MCF gas	292.9	762.0
Steam input, cu ft/MCF gas ⁵	420.3	372.7
Coal charged, lb/MCF gas ⁶	51.3	20.7
Coal actually gasified, lb/MCF gas ⁷	54.3	49.2
Residue output, lb/hr ¹	32.6	29.5
Yield of CO + H ₂ , cu ft/ton of dry coal charged	5.8	14.0
Fuel throughput rate, lb coal per cu ft generator volume per hr	29,560	36,410
Gas output rate, cu ft CO + H ₂ per cu ft generator volume per hr	11.6	27.3
	163.5	487.6

¹ On moist (as-charged or as-recovered) basis.

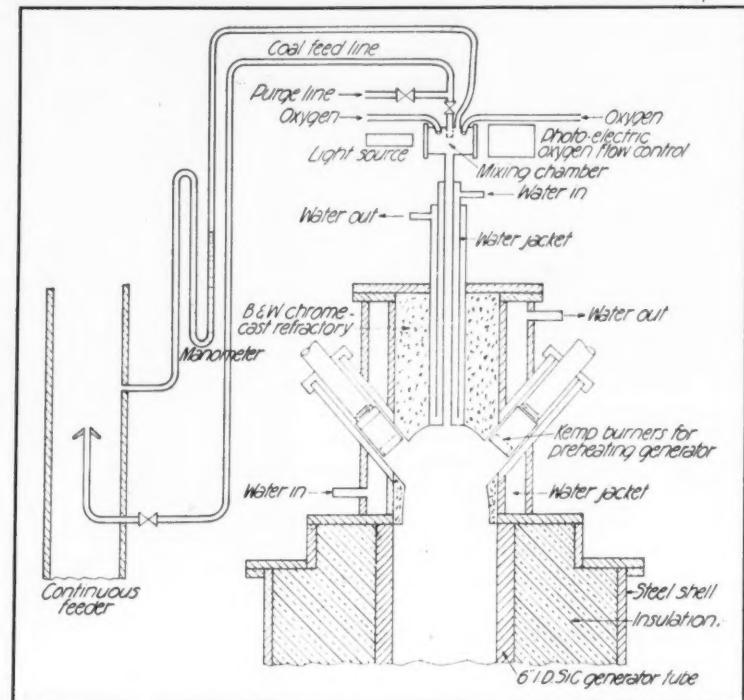
² All gas data refer to 60°F, 30" Hg, dry.

³ Consists of steam originating from moisture in coal. No steam was injected in any of the runs shown.

⁴ Dry, ash-free residue deducted from dry, ash-free coal charged.

Ideas

Bureau of Mines Tells Results of Work on Synthesis Gas Manufacture



Reactor head and mixing chamber

the report emphasizes the need for using much different ratios of carbon, oxygen and steam than would be theoretically the case. This is because of heat losses and incomplete reactions in the experimental equipment employed. A synthesis gas of low CO₂ content can be made if the ratios of 1) oxygen to steam and 2) carbon to oxygen + steam are high enough. An excess of carbon should be present with a deficiency of gasifying agents, which results in definite yields of carbonaceous residue, i.e., intentional "partial gasification." Synthesis gas made under these conditions is high in CO and low in H₂ content. Based on the experimental work described

thoroughly in the report, the quality of synthesis gas made, expressed by the $\text{CO} + \text{H}_2$ content and by the ratio of H_2 to CO , depends upon: 1) type and size of coal fed, 2) coal feed rate, 3) oxygen-to-coal and steam-to-coal ratios, and 4) steam temperature. The velocity at which the reactants and synthesis gas flow through the reactor is of prime importance in securing gasification efficiency. Reactor diameter and length determine the maximum economical throughput of coal. The top of the reactor used in the latest recorded experiments is shown in drawing. The reactor receives its coal in a fluidized state from a continuous pneumatic

Table II
Gas Analyses, Percent

	Run 33A	Run 49
CO_2	17.0	7.3
O_2	.5	.3
Unsaturated HC	.9	2.2
H_2	25.5	28.6
CO	51.1	59.2
CH_4	5.0	1.4
N_2	—	1.0
Total	100.0	100.0
Btu (60, 30 dry, gross) ¹	312.6	334.1
Specific gravity (air = 1) ¹	.81	.75

¹ Calculated from gas analysis.

feeding system. A dry-residue recovery system is also a part of the installation. As shown, the reaction zone is defined by a 6" ID silicon carbide tube. It is 7' long and has a 1" wall.

Before beginning a run, the reactor is brought up to temperature with the Kemp burners. Temperature range is about 2200°F at top to about 1800°F at bottom section. Coal, oxygen and steam flow into reactor and through it by maintaining pressure differentials. Pressure in the reactor is slightly above atmospheric, pressure in the fuel-oxygen mixing chamber is about 2 psi, and pressure in the continuous feeder is controlled to be about 4 psi above that in the mixing chamber. The velocity of the oxygen-coal stream through reactor is about 110 to 130 ft/sec, about four times the calculated rate of flame propagation; thus, possibility of "flashback" is excluded.

Operating data and results with a high volatile and a low volatile coal are shown in Table I. Analyses of the gas produced in these two runs are in Table II.

(Summarized from Report of Investigations 4742, "Laboratory-Scale Work on Synthesis-Gas Production." Copies are available from Bureau of Mines, Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa.)

Offers timestudy methods for foremen

Second edition includes recent developments in timestudy procedures and applications. Emphasizing the practical side, this book tells how to start a timestudy, how time elements can be recorded, and how to compile and chart results. Basic types of wage incentive plans are discussed. There are numerous self-test questions, cartoon type illustrations, and simplified diagrams. Containing 208 pages and approximately 90 illustrations, "Timestudy Fundamentals for Foremen" is a complete primer. To obtain this book remit \$3.00 direct to McGraw-Hill Book Co., Dept. CP, 327 W. 41st St., New York 18, N. Y.

JOURNEY'S END
and Protected by **Gaylord**
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Determining trend of average package weight helps reduce amount of overfilling . . .

high-speed packaging operations require automatic control

Utilization of electronic controls need not be limited to the common, continuous control problems involving temperature, rotary speed, liquid level, etc. Consideration is now being given to their application as a means of obtaining statistical control of package weights on high-speed packaging lines involving, for example, 50 or more packages per minute.

It is possible to reduce the extent of overfilling without incurring the hazard of underfills by determining shifts in the average weight of packages. Manual check-weighing or spot checking used for low speed lines is obviously unsatisfactory at high rates. Similarly, manual measurements, calculations and plotting of statistical results are too slow and cumbersome for practical use on high speed lines. However, comparatively inexpensive electronic "brains" that are not large and complex meet the requirements of such operations.

Fundamental purpose of statistical quality control is to determine long period trends at their start so that compensation can be made. Such trends differ from pure chance variations from package to package which can only be corrected by redesigning the packaging process to eliminate cause for variation. A partial list of causes for weight variation includes change in product density, changes in filling machine adjustment, uncertainty of cut-off of the filling machine, variation in amount of product in machine hopper, etc. Some of these result in rapid fluctuations in package weights; others cause gradual changes.

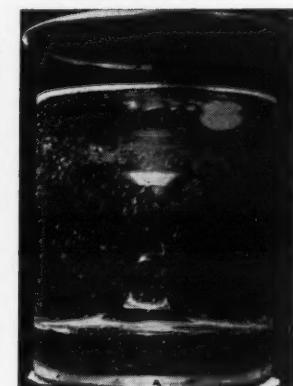
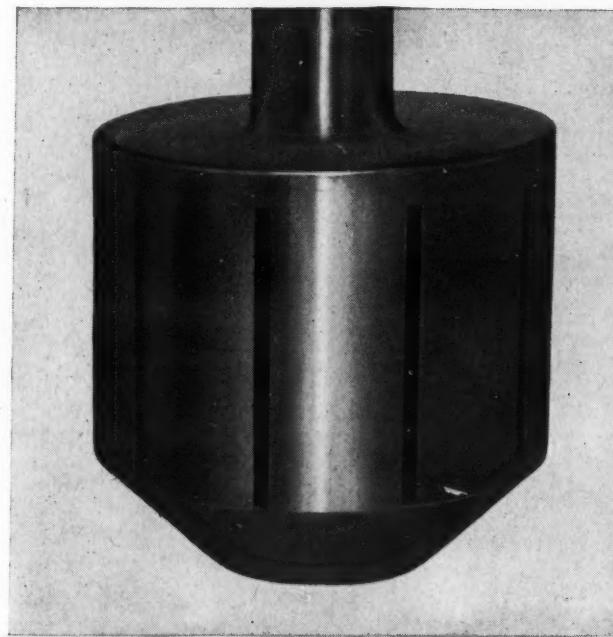
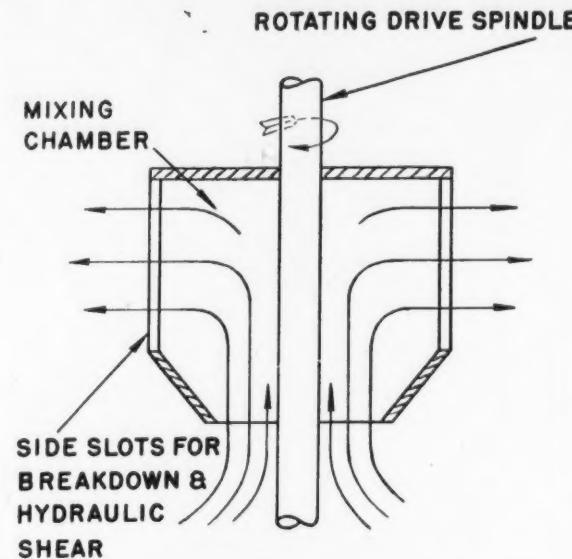
With one system of electronic controls, a measuring device weighs each package as it moves along the conveyor belt, and produces an electrical signal proportional to the deviation of each package from the nominal weight. This signal is applied to an electric computer which determines the average voltage and the range in voltage. These two values, representing average weight of samples and weight range respectively, are compared with fixed voltages representing the statistically determined control limits.

Control action by a servomechanism then adjusts rate of fill of the filling machine whenever average weights are above the higher control limit or below the lower control point.

A 16-page pamphlet describing the

NEW DISCOVERY

Premier Simplex Dispersators



(Above) Shows DISPERSATOR running at comparatively low speed, sucking up a heavy organic liquid and producing a finely divided dispersion, which is shown being thrown off the sides of the DISPERSATOR itself.

(Right) The two liquids are ortho-nitro toluene and water. Speed of

DISPERSATOR is low to show its action. Suction column of O.N.T. is shown entering the bottom of the DISPERSATOR and leaving in a dispersed state. If DISPERSATOR reaches its proper speed (3,000-4,000 r.p.m.'s) all of the O.N.T. would be dispersed in the form of an emulsion within a few seconds.

PREMIER MILL CORPORATION
2181 GENESEE STREET • GENEVA, NEW YORK

IN MIXING Greatly Reduces Mixing Time

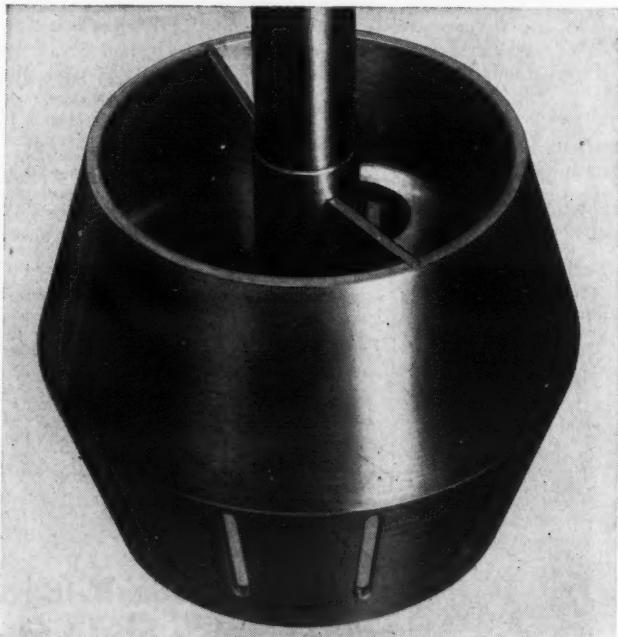
Premier Duplex Dispersators

The success of the SIMPLEX DISPERSATOR in the high-speed, low-to-medium viscosity mixing field, has led Premier Engineers to develop a second model, the DUPLEX DISPERSATOR, which has extended the benefits of the Dispersator action into high-viscosity, low-speed applications.

Whereas the SIMPLEX DISPERSATOR has a single-flow direction, the DUPLEX DISPERSATOR permits *two-way* flow, by virtue of a double cone construction which forces liquids to enter the rotating cylinder from both top and bottom. This *two-way* flow forces intense mixing and wetting action in the lower cone before liquids escape through wall slots.

Thus the DUPLEX DISPERSATOR may be used effectively to mix or blend two liquids of different specific gravity. It is ideal for drawing heavy solids from the bottom and light materials from the surface to insure thorough wetting and dispersion.

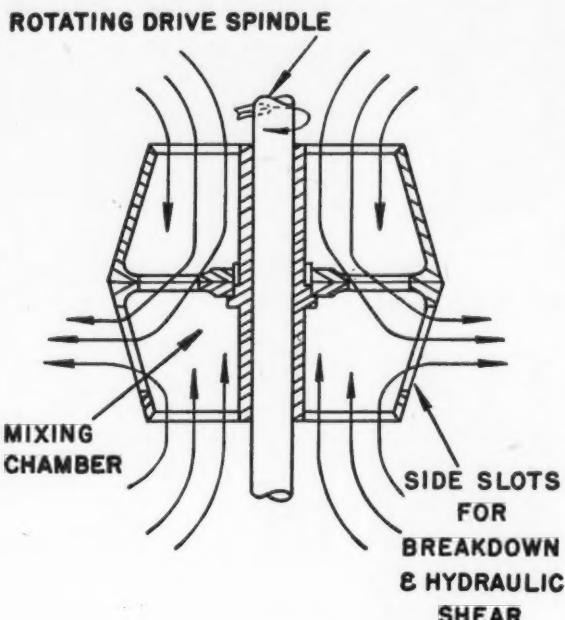
The DUPLEX DISPERSATOR, due to its double-flow action, will mix fluids of greater viscosity than the single-cone SIMPLEX DISPERSATOR. This is an important function in the blending of color pastes and in promoting chemical reactions in mixtures which become highly viscous as the reaction is completed.



ASK OUR ENGINEERS

If you have processes where mixing, dispersing, or reacting time is excessive, tell your problem to our engineers. If you give full details, our engineers can help you by recommending the right model and size DISPERSATOR to solve your problem.

PATENTS APPLIED FOR



★
★ LABORATORY
★ MIXER
★
★ Laboratory or pilot plant
★ model available, which
★ shows the revolutionary
★ features of these Dispersators.
★ You can try this mixer
★ on a small scale and at
★ low cost.
★

MAIL THIS COUPON TODAY!

PREMIER MILL CORP.
2181 Genesee Street, Geneva, N. Y.

Send me full details of the SIMPLEX DISPERSATOR and the DUPLEX DISPERSATOR.

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State

IDEAS

operation of such a system is available. It includes a review of basic concepts of statistics as applied to the control of package weights. Concepts are exemplified with figures of weight deviation of packages taken from an actual packaging line, and illustrated by 8 drawings showing normal distribution, shifts in distribution, control charts, deviation in average package weights, etc. A distribution classifier for collecting weight data for analysis is also pictured.

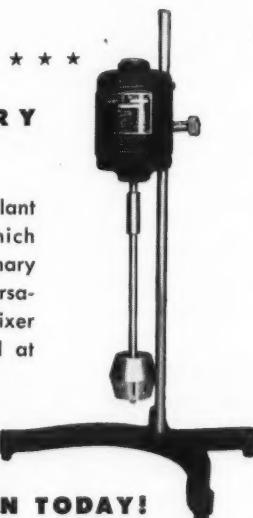
Written by Roger L. Merrill of Battelle Memorial Institute, this report titled "Electronic Controls for Packaging Processes" is for sale at \$1 a copy from Packaging Institute, Inc., Dept. CP, 342 Madison Ave., New York 17, N. Y. . . . or for more information check CP 5959 on handy form, pages 2 and 3.

Stainless 20's resistance to corrosion adds to life of expansion joints . . .

bellows-type units of this construction stand up under sulfuric acid.

Failure of bellows-type expansion joints, in a short time, due to corrosive conditions has been a common occurrence. In an endeavor to build joints with greater resistance, various materials have been tried. In testing stainless steels, types 304, 316, and 347 proved inadequate in a number of cases, for one reason or another. Stainless 20, however, has delivered good service, for extended periods, in connection with such corrosives as tertiary amyl-phenol and amylene, slightly contaminated with sulfuric acid; high concentrations of salt water; sulfuric acid concentrations ranging from 35 to 65%, at temperatures from 110° F to its boiling point.

(MagniLastic Div., Cook Electric Co., Chicago, is building expansion joints of Stainless 20, produced by Carpenter Steel Co., Alloy Tube Div., Dept. CP, Union, N. J.)



Salt shaker vitamins

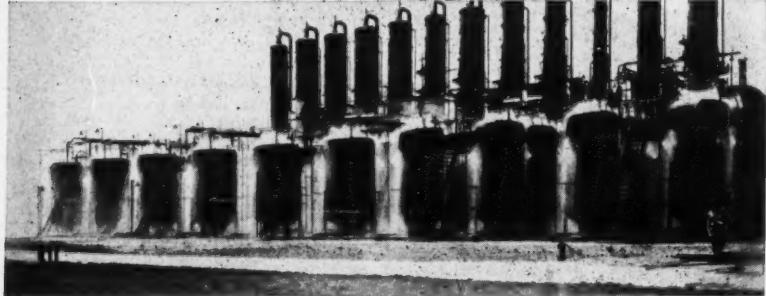
Getting your vitamins from a salt shaker is the suggestion of a patent issued to Merton A. Searle of St. Paul, Minn. Idea is explained as a "table salt having the surface of each granule uniformly coated with a powdered vitamin from class B₁ and B₂, and C, and mixtures thereof, the particles of powdered vitamin being small relative to the granules of salt." (National Patent Council, Gary, Ind.)

For more information on product at left, specify CP 5960 . . . see information request blank between pages 2-3.

BEAT FIRE TO THE PUNCH



WITH A BLAW-KNOX AUTOMATIC FOG SYSTEM



Deluge Systems, Wet Pipe Systems, Dry Pipe Systems, Water Spray and Fog Systems, Rate-of-Rise Sprinkler Systems, and Foam and Carbon Dioxide Extinguisher Systems.

"LITTLE
JOEY SPRINKLER"



Chemical fires don't "telegraph their punches"—they strike fast with little or no warning. But not so fast that a Blaw-Knox Fog System actuated by rate-of-rise thermostats can't knock 'em out with a smothering blanket of fog before they really get started.

A Blaw-Knox System engineered for the fire hazards existing in or around your plant is a most effective weapon against fire's toll. On the job 24 hours a day, it douses fires at their start, sounds alarms, closes safety doors... almost instantly.

Blaw-Knox can arrange to have your insurance savings as they accrue apply to the cost of a Blaw-Knox Fog System—providing you with the utmost in fire protection plus a good financial investment... Glad to consult with you and submit an estimate without obligation.

BLAW-KNOX SPRINKLER DIVISION
OF BLAW-KNOX CONSTRUCTION COMPANY
829 Beaver Ave., N.S., Pittsburgh 33, Pa.
Offices in Principal Cities

AUTOMATIC
FIRE PROTECTION
SYSTEMS



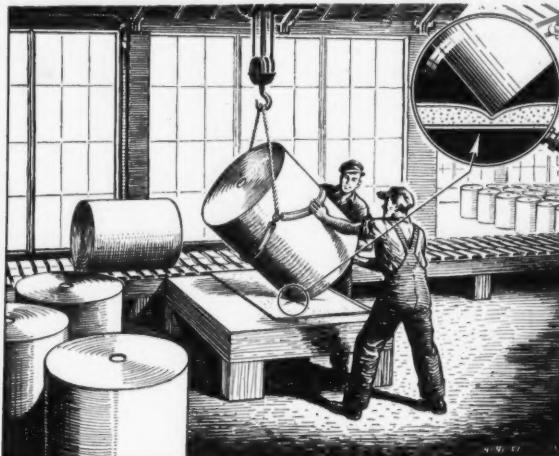
When inquiring check CP 5961 on handy form, pgs. 2-3

IDEAS

Rubber-mat "landing field"
assures paper rolls, other
fragiles, safe handling . . .

cushion impact during unloading and similar operations; have 2½" Airfoam center

Mats made of rubber and Airfoam are effecting vast savings in the paper industry in cushioning paper rolls against impact as they are unloaded. Damage to the ends of the rolls is prevented. The mats also have wide application



Paper rolls land without shock on rubber mats

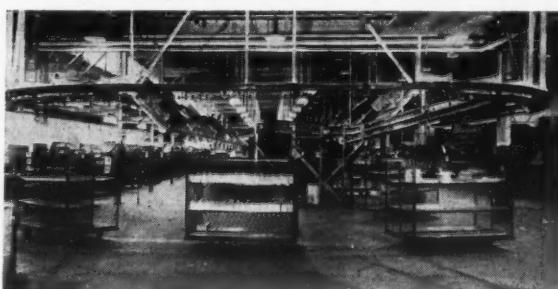
in many other handling operations involving fragile materials, including products packed in drums, etc.

Mats are built up with a 2½" center of firm Airfoam, and a top and bottom cover of high quality rubber about ¼" thick. Airfoam absorbs shock and the cover ties the mats together. (Mats are a product of The Goodyear Tire & Rubber Company, Dept. CP, Akron, Ohio.)

Roof of largest one story building covers 18 acres of warehousing . . .

saves labor and speeds handling total of 300 tons daily; stock consists of 35,000 items

One story warehouses are said to save 50% in time and space. Advantages of this type of construction have been demonstrated in the huge structure that warehouses 35,000 different hardware items distributed by Hibbard, Spencer,

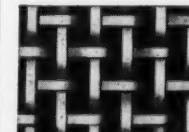


Dragline — 1,450 ft circulates through order filling area

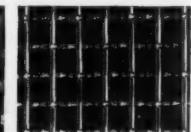
Bartlett & Co., Evanston, Illinois. Storage space of 603,000 square feet provides for tiering easily to 12 feet under 14 foot ceilings.

To simplify construction, Engineering Systems, architects and engineers, made the warehouse into a vast single room. Within it are enclosed three railroad tracks, capable of

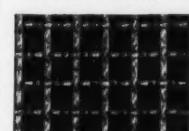
9 REASONS for specifying Cambridge Industrial Wire Cloth



1. Flat Wire Mesh



2. Single Intermediate Crimp



3. Double Intermediate Crimp



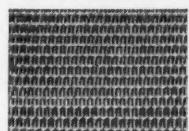
4. Double Crimped



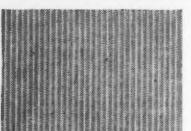
5. Twilled Weave



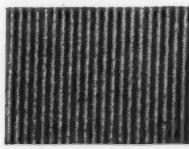
6. Calendered Backing Screen



7. Oblong Mesh



8. Plain Dutch Filter Cloth



9. Twilled Dutch Filter Cloth

• **SELECT THE WIRE CLOTH** that meets your requirements best from these 9 basic Cambridge weaves. Each is available to you in any metal or alloy wire of any gauge. Mesh sizes range

from 4" openings to 20 x 250 mesh, according to your needs. Many types of Cambridge wire cloth are ready for immediate shipment.

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TELL US your special problem in filtration, screening or sizing. Perhaps our facilities and experience can be combined to produce the special type of wire cloth needed.

FREE WIRE CLOTH HANDBOOK! 73 pages of specifications, metallurgical data and descriptions of industrial wire cloth. WRITE TODAY for your copy of this valuable reference book.



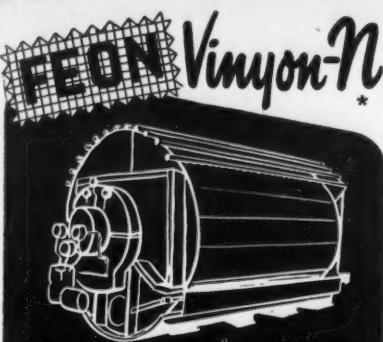
**The Cambridge
Wire Cloth Co.**
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WIRE CLOTH METAL CONVEYOR BELTS SPECIAL METAL FABRICATIONS

OFFICES IN PRINCIPAL INDUSTRIAL CITIES
See "Wire Cloth" in your Classified Telephone Directory.

When inquiring check CP 5962 on handy form, pgs. 2-3



LASTS OVER 9 MONTHS on Rotary Vacuum Filter

Switching to FEON VINYON-N saved \$500.00 a year in cloth expense alone on this scraper-discharge filter in the food industry. Cotton cloths had lasted less than a month. Additional savings resulted from reduced "down-time" for cloth changes, lower labor costs, increased production.

Success stories like this are routine with FEON VINYON-N filter cloths. A copolymer of acrylonitrile and vinyl chloride, this new fabric is virtually unaffected by concentrated acids or alkalies, bacteria, and most organic solvents. It has high strength and abrasion resistance, and handles hot materials up to 250° F.

FEON VINYON-N is woven from continuous filaments which have sleek, shiny surfaces that make it ideal for rotary filters — non-blinding, free from plugging, easy to clean. In spun-staple form it is known as dynel and has a soft, resilient texture that is ideal for filter presses. Dynel seals easily, without rim-cutting.

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31-E



FILTRATION FABRICS DIVISION FILTRATION ENGINEERS, Inc.

155 Oraton Street • Newark 4, N. J.

When inquiring check CP 5963 on handy form, pgs. 2-3

AUGUST, 1951

IDEAS

handling 40 freight cars at once. The company receives 150 tons of new merchandise on an average every day and ships 2,000 individual orders that weigh a total of 150 tons.

As the first step in saving time, incoming freight cars are spotted according to contents, often within 50 or 60 feet of where goods will be stored. Wherever possible, all



Stock boys use roller skates to speed trips from bins to dragline cars

goods are palletized and tiered with electric fork trucks. A dragline circulates through each order filling area. Forward, or active stock, includes the full package order filling area. Open stock section is for orders of less than package quantities.

Many of the stockboys are provided with roller skates. When a stockboy is given an order, he picks an empty triple deck dragline car and starts loading it. When he's through, he lets it go, the line taking it to the edge of the packing area. There, it is checked and truck is marked with day and hour of checking.

Operations on the full package line are similar, except that the dragline is longer and trucks are single deck to accommodate bulkier loads.

Most of the cartons in which shipments arrive are re-used. These cartons reach packers on a conveyor belt from the incoming stock department. They are kept in overhead racks so that all sizes and shapes are readily available.

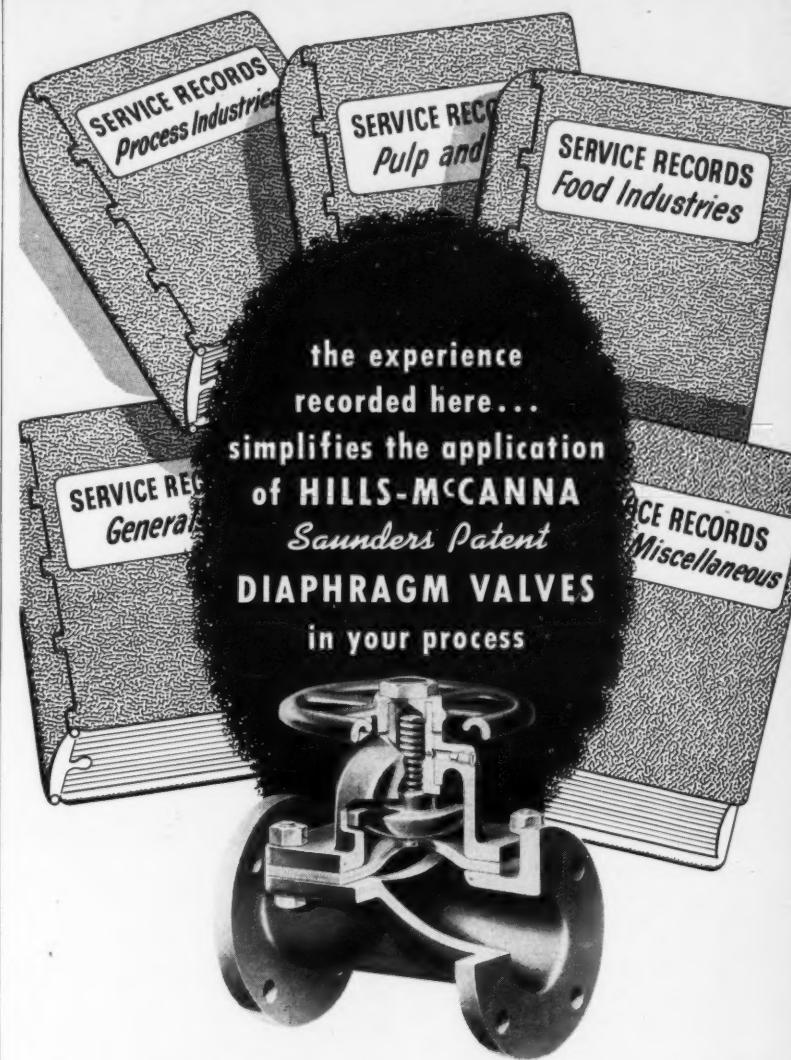
An office area provides comfortable working space for 500 employees. There is not a single ceiling-high partition within its 60,000 square feet. Fluorescent lighting and sound proofing contribute to worker comfort and efficiency.

Heating and air conditioning outlets are placed behind the acoustical tile, where they cannot be seen. Using about a fourth of the tiny openings in the tile, instead of special ducts, cooling or warming air is distributed over a greater area.

Because of the size of the plant, mechanical means have had to be devised to replace office boys as too much time would be involved in walking about to deliver and pick up papers and records. Loss of papers is prevented by guards. A pneumatic tube system running to warehouse floor supplements conveyors.

The entire structure provides warehouse, general offices, executive offices, cafeteria, auditorium seating 1,000 all under one 18-acre roof.

(Building designed and constructed by Engineering Systems, Dept. CP, Chicago, Ill.)



If you are conveying corrosive or hard-to-handle fluids, a Saunders Patent Diaphragm Valve may be the answer to your valving problems. If so, the experience recorded in the five volumes illustrated above is your best assurance of getting the right valve for your needs. In these records are body and diaphragm material recommendations for handling some 2500 substances, based on Hills-McCanna's nearly 20 years' experience in the manufacture and application of Saunders Patent Valves. If you have a tough valving problem, let this "know-how" work for you.

Hills-McCanna Saunders Patent Diaphragm Valves are made in sizes from $\frac{1}{2}$ " to 14" for manual, automatic or remote operation with a choice of 13 diaphragm materials and 48 body materials. Write for complete information. HILLS-MCCANNA CO., 2370 W. Nelson St., Chicago 18, Ill.

HILLS-MCCANNA CO.
saunder's patent
diaphragm valves

Also manufacturers of — Proportioning Pumps
Force-Feed Lubricators • Magnesium Alloy Castings

When inquiring check CP 5964 on handy form, pgs. 2-3

Page 59



For chemical feeding that's flood-proof and fool-proof, install the Omega Rotolock. This volumetric feeder is the "last word" for feeding dry, pulverized materials which tend to hang up or "arch" in hoppers and "flood".

The Rotolock is a combination of job-proven Omega units. Its feeding mechanism incorporates devices to assure full volumetric delivery at each revolution of the rotor. The famous Omega Variable Speed Drive provides instant and positive adjustment of feeding rate over a 100 to 1 range. Hopper agitators are an integral part of the Rotolock, preventing arching in the hopper and contributing to the high accuracy of this simple feeder.

Whether your feeding problem calls for manual control or for automatic proportional pacing by electrical or pneumatic meters, Rotolock is ideally suited to the service. For complete information and Bulletin 45-G1, address Omega Machine Co. (Division of Builders Iron Foundry), 387 Harris Ave., Prov. 1, R. I.



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ROTOLOCK**

Omega manufactures a complete line of volumetric and gravimetric feeders for dry materials and for gravity feeding of liquids and solutions:

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OMEGA
The Last Word in Feeders



When inquiring check CP 5965 on handy form, pgs. 2-3

IDEAS

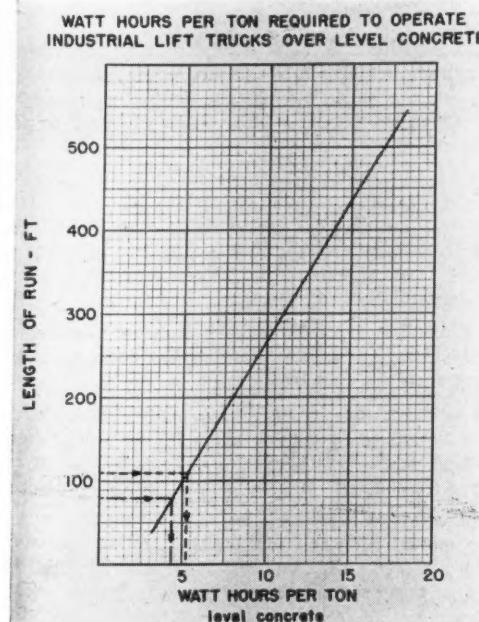
How to determine capacity of storage batteries for electric trucks

Determination of storage battery capacity for electric-powered industrial trucks is often left to the truck supplier, the battery representative, just plain guess, or duplication of present batteries. There is an engineering procedure which, if followed, will enable the purchaser to correctly specify his own battery requirements or check suppliers' recommendations. In addition, these calculations will insure against purchasing under-capacity batteries which run down before the end of the work shift, or conversely, over-capacity batteries calling for unwarranted initial cost.

To illustrate the procedure for determining industrial truck battery capacities, a typical case will be assumed: a 3,650 lb truck, 2,000 lb load, 3' average lift, 110' average haul, and 30' 10% grade to be traversed by loaded trucks.

It is necessary to determine the power (watt hours) required to traverse the average haul distance loaded, climb the grade, traverse the haul distance empty (grade deducted), lift the load for stacking, and tilt the mast for load centering.

Chart indicates the watt hours/ton required to move a truck along a given path of level run. Following the



dotted lines it is seen that 5.4 watt hours are required to haul 1 ton along the 110' haul of the example. Total load (truck plus load) is 5,650 lb or 2.825 tons. Multiplying 2.825 tons by 5.4 watt hours gives 15.25 watt hours required for the level run.

To determine the watt hours required for going up grade (in addition to that required for level running), following formula is used: $watt\ hours = tons\ (truck\ plus\ load) \times feet\ (length\ of\ grade) \times grade\ (\%) \times 0.013\ (constant)$. Substituting values in the example in this formula, 11.02 watt hours is extra power needed for grade.

To calculate watt hour requirements for the empty return trip, deducting the grade, 110' total return distance less 30' of grade equals 80'. Again using the chart, 4.4 watt hours are required per ton on return trip. Total weight

TO PAINT OVER



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2. Resists most chemicals.
3. Dries in one hour.
4. Non-yellowing in white.
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RUBBER-COAT MASTER FLAT ENAMEL

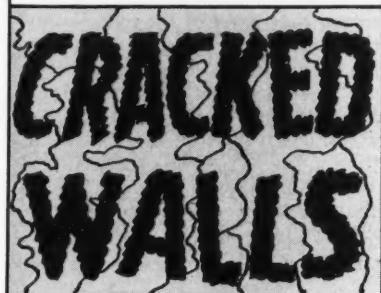
The Full Rubber-base FLAT Enamel

RUBBERIZED DAMPCOAT ENAMEL

The Full Rubber-base HIGH GLOSS Enamel

ANOTHER W & W FIRST!

TO PAINT OVER



RUBBER-COAT SILICATED MASTER FLAT ENAMEL

A specially bodied, flat enamel for use on dry wall construction or to hide minor cracks or wall faults in one coat. RUBBER-COAT SILICATED MASTER FLAT ENAMEL is an easy brushing, yet thick coating, which bridges hairline cracks in plaster or unevenness in wood. It gives an excellent finish for dry wall construction as it adheres excellently to wall boards of many varieties.

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130 LINCOLN ST. BOSTON 35, MASS.

When inquiring check CP 5966
on handy form, pgs. 2-3

CHEMICAL PROCESSING

now being 1.825 tons, multiplying 4.4 watt hours by this figure gives 8.03 watt hours required for empty return trip.

To determine the watt hours required for lifting, following formula is used: $watt\ hours/lift = tons\ of\ load \times feet\ of\ lift \times 2$ (constant). Substituting the correct values of the example, 6 watt hours are required to lift the load. (For unstacking, the following formula applies: $watt\ hours/lift\ empty = 1/3\ load\ capacity\ in\ tons \times feet\ of\ lift \times 2$.)

To determine the energy required to tilt the mast, following formula is used: $watt\ hours/tilt\ load = tons\ of\ load \times 1$ (constant). Substituting, 1 watt hour/tilt loaded is required. ($Watt\ hours/tilt\ empty = 1/3\ load\ capacity \times 1$.)

Summing up the components of power in the run:

Run with load (no grade)	15.25
Extra power for grade	11.02
Run empty (grade deducted)	8.03
Power required/lift	6.00
Power required/tilt	1.00
41.30 watt hours per trip	

Assuming 250 trips per day, a total of 10,325 watt hours of battery power is required. If a 32-volt battery is selected (as recommended by truck manufacturers for this size truck), it must have approximately 323 ampere hour capacity (ampere hours equal watt hours divided by volts).

(Formulas are from the Handbook of Material Handling, published by the Electric Industrial Truck Association. Summarized from "How to Determine Industrial Truck Battery Requirements," Gould-National Batteries, Inc., Dept. CP, Trenton 7, N.Y.)

Plan safety program for fertilizer industry . . .

industry urged to send representatives to National Safety Congress in Chicago in October

Plans were made recently for a fertilizer industry safety program at the first meeting of a newly organized fertilizer section of the National Safety Council, under the chairmanship of A. B. Pettit, supervisor of industrial health and safety of The Davison Chemical Company. A formal program for nation-wide action will be presented at the October 11, 1951, National Safety Congress in Chicago.

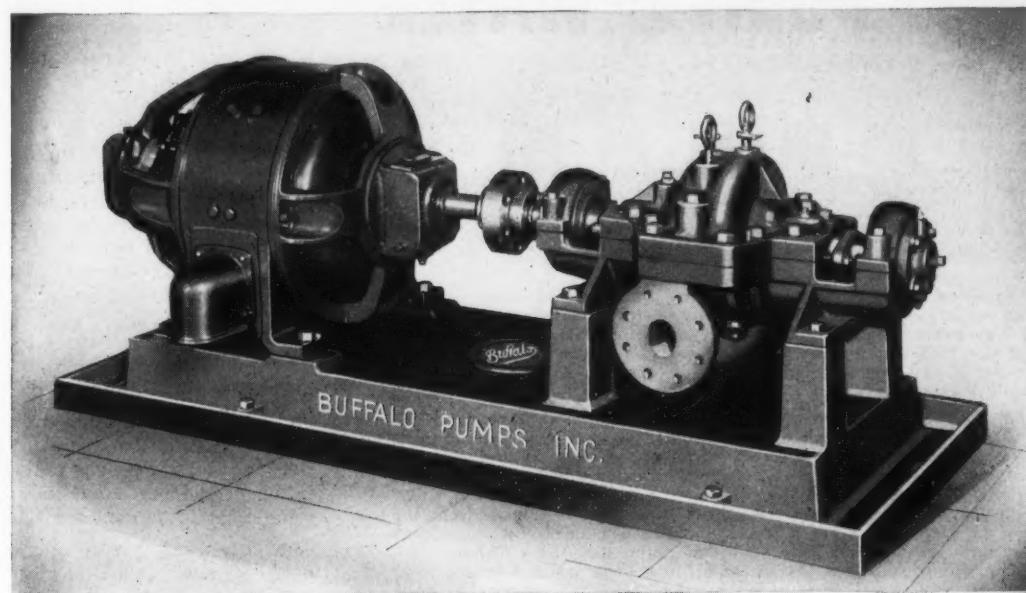
Although there are more than 500 fertilizer plants in the United States, there has never prior to this been any organized national effort to reduce the appalling frequency and severity of accident injuries occurring in the industry.

Pointing out that many other industries have for years cooperated to conduct special sessions for the solution of specific problems at the National Safety Congress, Mr. Pettit said that industries which have conducted special aggressive programs have been well rewarded by a substantial reduction in the number and seriousness of their accidents and a decided decrease in the industrial illness experienced by employees.

The fertilizer industry is being urged to send representatives to the forthcoming meeting of the Congress where measures for reducing accidents and industrial illness, such as the exchange of health and accident causes, will be discussed. The National Fertilizer Association and American Plant Food Council have indicated whole hearted support.

(Information received from The Davison Chemical Company, Dept. CP, Baltimore 3, Md.)

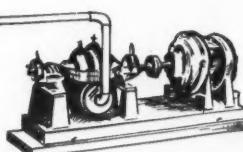
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"Buffalo" Class "RR" Pumps are adequately built for the severe service of handling hot or chilled clear water at high heads, with exceptionally high efficiency. Practically no maintenance problem — modest power requirements — rugged endurance on the job — are what you get in "RR" Pumps. You will find all engineering details in BULLETIN 980-B. Write for your copy.



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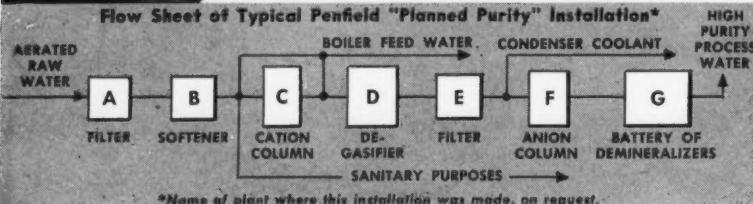
A BETTER CENTRIFUGAL PUMP FOR EVERY LIQUID

When inquiring check CP 5967 on handy form, pgs. 2-3



✓ Process Improved
✓ Rejects Decreased
✓ Costs Lowered
✓ Production Increased
with "PLANNED PURITY" WATER

Flow Sheet of Typical Penfield "Planned Purity" Installation*

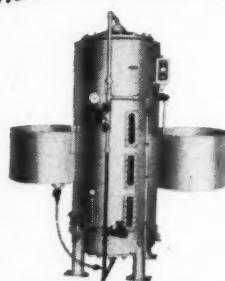


*Name of plant where this installation was made, on request.

Problem Assigned Penfield: Raw well water of 347 PPM total hardness (calculated as CaCO_3) and 187 PPM alkalinity, methyl orange, as well as considerable hydrogen sulphides, needs to be conditioned for use as follows: 1300 gph for boiler feed water and sanitary purposes; 100 gph for use as make-up water for a condenser coolant; and 2500 gph for a process requiring exceptionally high purity water.

"Planned Purity" Solution: Aerated raw water is passed through Sand Filter (A) to remove colloidal sulphur (precipitated by aeration), then through Softener (B), at which point water of satisfactory softness for sanitary purposes is drawn off. Approximately 3000 gph of softened water passes on to large Cation Column (C) where the cations are removed and the 187 PPM of alkalinity are converted to carbonic acid which can be blown from the water into the Degasifier (D) as carbon dioxide. The degasified water then is pumped through the Sand Filter (E) and on to the Anion Column (F). However, provisions are made (1) for combining water taken from the large Cation Column with equal parts of water taken from the Softener to make an ideal blend for boiler feed use; and (2) for drawing off 100 gph of water demineralized down to approx. 20 PPM total solids, which with small additions of caustic soda is ideal for use as make-up water for a condenser coolant. The remaining water passing through this multiple-use conditioning system goes on to a battery of Demineralizing Units (G) which deliver approximately 2500 gph of the exceptionally high purity water (conductivity of 1,000,000 ohms) required in the plant's process.

NEW! Mono-Bed Unit



The Penfield Mono-Bed Demineralizer shown above operates upon the most efficient and effective demineralizing technique known — the intimate mixing in a single container of cation and exceptionally strong anion base exchangers. In comparison to distilled water costs, Penfield Industrial Demineralizers provide savings as high as 85% and in one reported instance cut costs 98%. Send for "Penfield Pays" folder giving specifications of all Penfield Demineralizing Units — from 10 gals./hr. to 10,000 gals./hr.

LET PENFIELD ENGINEERS MAKE A "PLANNED PURITY" SURVEY OF YOUR PLANT

As in the typical "Planned Purity" installation described above, by planning water-treating methods specifically for the various standards of purity and quantities required, Penfield engineers often are able to suggest a multiple-use conditioning system which, while holding equipment investments to a minimum, makes important contributions both to reduced plant operating costs and to improved process or end product results.

Write today describing your water conditioning needs.

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FILTERS • SOFTENERS • DEGASIFIERS • DEMINERALIZERS

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IDEAS

Directional dirt-fall collector to locate the sources of air pollution . . .

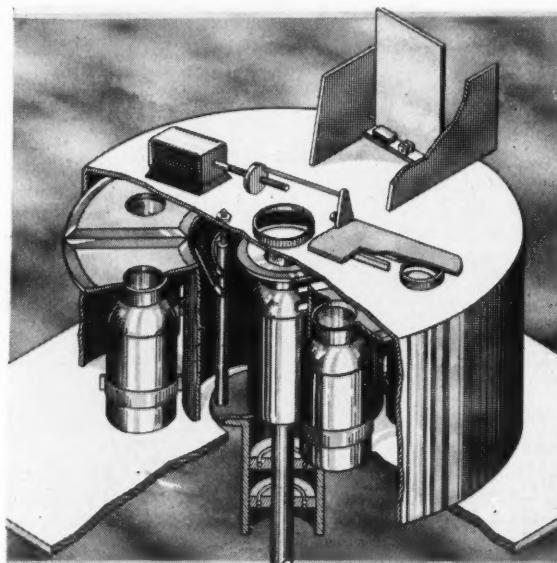
knowing the direction from which large quantities of dirt come gives index of location of offenders

A new instrument for use in analyzing air pollution problems in highly industrialized areas has been developed by Battelle Institute. Because it will tell the direction from which large quantities of dirt come, it is expected to become useful to industries and municipalities in locating the sources of air pollution nuisance.

Known as a "directional dirt-fall collector", the instrument will provide an index of the general location of plants which may be responsible for heavy dirt fall. It is designed to collect heavy dirt from any direction the wind is blowing. For a reliable indication of the sources of heavy contamination, the instrument must be exposed for 30-day collection periods over many months in a carefully chosen location representative of a given area. The amounts of collected material must be correlated with data obtained from the Weather Bureau. A so-called 'wind-rose pattern' shows the number of hours the wind has blown from the eight points of the compass. Knowing this, it is then possible to determine the relative amounts of dirt which have fallen per hour into the instrument from various directions.

For a complete dirt-fall collection program, several directional dirt-fall collectors are required. Simultaneously, fine particles (aerosols) and gas and odor concentrations in the air, along with weather conditions, may be analyzed using other appropriate instruments and equipment.

The instrument (see illustration) consists of a series of 8 jars arranged in a circle with a ninth jar in the center.



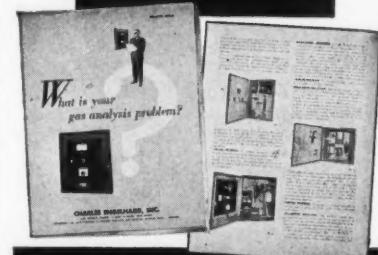
Directional dirt-fall collector

These jars have metal funnels which will collect dirt not falling directly into the jar mouth. At the end of the collection period, the dirt may be brushed into the appropriate jar.

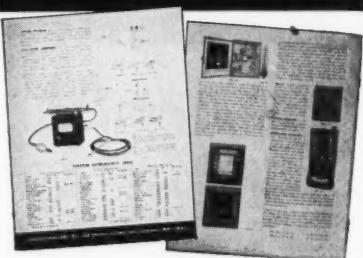
Jars are covered with a canopy which has one hole at the outside edge and another at the center. When the wind is blowing at a velocity greater than 3 mph, the outer hole is covered and the wind vane turns the canopy in such a manner that the dirt is collected in the jar corresponding

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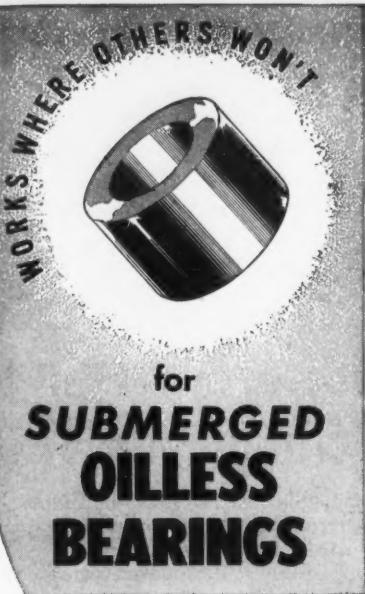
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IDEAS

to one of the wind directions on the eight points of the compass. When the wind falls below 3 mph, the auxiliary wind vane (perpendicular to the directional wind vanes) moves to a vertical position closing an electrical contact which operates the motor to move the cover closing the outer hole.

In this same operation, the inner hole is uncovered and all of the dirt falling during this period of calm is collected in the central jar. When the wind velocity exceeds 3 mph, the auxiliary wind vane is blown from a vertical position and an electrical contact moves the cover to close the center hole and uncover the outer hole.

(The directional dirt-fall collector will be made commercially available by Eberbach & Son Company, Ann Arbor, Mich. Information received from Battelle Memorial Institute, Dept. CP, Columbus 1, Ohio.)

Shot and sand-blasting not needed to remove forging scale . . .

pre-heat-treatment chemical bath literally blasts scale from forgings when they are quenched

Removal of furnace and forging scale from forged steel parts should no longer impose a difficult problem; that is, if a pre-heat-treatment chemical bath is employed. Tenacious scale literally blasts from the surface of the forgings after they are heat treated and cold water quenched, and in most cases where oil quenched. Sand or shot blasting can be entirely eliminated in many cases, or reduced to a minimum.

It has been shown that scale is completely removed from carbon steel forgings, even from deep indentations and blind holes hard or impossible to reach with blasting. Successful descaling has been achieved with some SAE alloy steels.

Bath is made up of a chemical product — Pennsalt SR-4 — dissolved in weak muriatic acid and water. Ordinary rubber-lined tanks are suitable for the bath. No heating is required. Dipping baskets can be made of simple sheet iron.

Parts covered with forging scale are immersed in the bath for 5 minutes and may then be placed directly into heat treating furnaces, or can be stored for later heat treating. Heating is carried out in accordance with good metallurgical practices, except that a non-reducing or prepared atmosphere is not required.

Following heating, forged parts are cold water quenched, leaving them completely scale-free for subsequent machining. Where scale removal is not complete in oil quenching, shot or sand-blasting is cut to a minimum.

(Pennsalt SR-4 is a product of the Pennsylvania Salt Mfg. Co., Dept. CP, 1000 Widener Bldg., Philadelphia 7, Pa. . . or for more information check CP 5971 on handy form, pages 2 and 3.)

Quick reconditioning method repairs tar-gravel roofs

More economical than conventional methods, mechanized system cuts time and labor in reconditioning plant roofs. Four-page, 2-color bulletin, "Planned Maintenance for Tar and Gravel Roofs," is issued by The Tremco Manufacturing Co., Dept. CP, 8701 Kinsman Road, Cleveland, O. When inquiring specify CP 5972 on handy form, pages 2 and 3.

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years ahead in solving processing problems

- Spiral-uphill motion insures production capacities with laboratory accuracy of product.
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- Separate wet or dry from 1 mesh to 400 mesh.
- Consumes less power than 200-watt light bulb.
- Eliminate plant shutdown — guaranteed screen cloth life.
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- Triple screen capacity per sq. ft. of area.



Model E-30

Reduce your costs and increase your profits and plant efficiency with the SWECO Separator. Send for complete information.



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SAVE Time and Production Costs
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- * Sturdy construction . . . dependable operation . . . low maintenance cost.
- * Built in sizes from 1-gal. laboratory units to largest plant size kettles.
- * Facilities available for pre-testing operation.

Write for complete information.

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IDEAS

Static friction tests with special lubricants told by NBS . . .

chlorinated, fluorinated types with additives in combination with various metals compared

Static friction tests of a number of relatively new special lubricants in combination with various metals, have been recently completed at the National Bureau of Standards. Selection of a lubricant for a particular special application was the immediate goal of the investigations. Although lubricant information was the primary concern of the tests, the effect of metal composition and of metal surface finish on static friction was also investigated.

Static friction coefficients are indices of the ease with which one of a pair of metal surfaces (lubricated) will start to slide in relation to the opposing surface. While low static friction is desirable in many applications, it cannot be taken as an indication of over-all lubricant merit.

Some twenty special lubricants, principally chlorinated and fluorinated hydrocarbons with and without various additives, were tested. Additives investigated included graphite, molybdenum disulfide, zinc oxide, boron nitride, and oxidized petroleum compound. An SAE 10 mineral oil (Navy symbol 2110) was used as a reference or basis of comparison. Metal surfaces used in various combinations for the tests were stainless steel, carbon steel, cast iron, aluminum alloy, and chromium plate. An inclined plane test apparatus of conventional design was used.

Lowest static friction was shown, in general, by test lubricants containing molybdenum disulfide — closely followed by a mineral lubricating grease, dry molybdenum disulfide, and a fluorinated hydrocarbon with graphite additive.

Lubricants for which the most favorable data were obtained showed static friction about 50 to 60% less than the SAE 10 reference oil. A lubricant containing an oxidized petroleum compound, and one containing a silicone grease, gave slightly less friction than the SAE 10 oil. Higher friction than the reference oil was shown by the chlorinated and fluorinated lubricants without additives, and by the remaining special lubricants.

Some of the metal combinations used ranked about the same in friction, relative to other metal combinations, regardless of the lubricant with which they were tested. In the case of certain metal combinations, on the other hand, the relative rank of the combination depended to a much greater extent on the lubricant used.

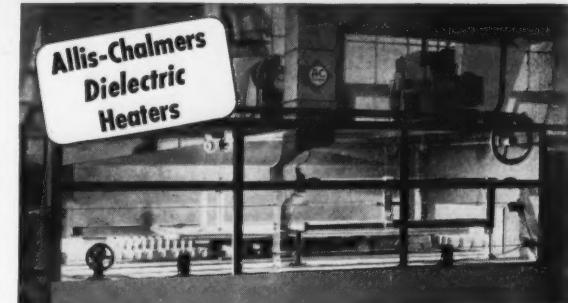
Certain heat-treated stainless steel combinations showed, with most lubricants, the lowest friction values. Polished surfaces sliding on lapped surfaces tended to give lower friction and less variation than ground surfaces sliding on ground surfaces.

(Information received from the National Bureau of Standards, U. S. Department of Commerce, Washington 25, D.C.)

Flying glass won't cause damage when glass-plastic window is broken by explosion . . .

window can be temporarily repaired on the spot to provide protection against elements

A glass-plastic laminate window recently developed is said to virtually eliminate the dangers of flying glass in explosion areas. An interesting aspect is that the laminate window may be closed after an explosion to provide temporary protection against dust and the ele-



Fast, Uniform Drying Can be Simple as This

INSIDE VIEW of dielectric drying oven shows simplicity of dielectric drying. Simply place units to be dried on moving conveyor. Units pass between electrodes and in a matter of minutes come out completely dried — never burned.

Dryers like this save time, fuel, space, and often provide better quality because drying is always uniform.

Get engineering and cost studies from your nearby Allis-Chalmers Sales Office, or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3357



ALLIS-CHALMERS

When inquiring check CP 5975 on handy form, pgs. 2-3

Wherever Foam's a problem . . .

DOW CORNING ANTIFOAM A

**EFFECTIVE IN FOAMERS RANGING
FROM ADHESIVES TO ZEINS
INCLUDING FOODS AND DRUGS**



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DOW CORNING CORPORATION
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When inquiring check CP 5976 on handy form, pgs. 2-3

ments until permanent repairs can be made. This is because the window is not blown out of the frame, but folds back on segments when an explosion occurs.

Window consists of three layers laminated into a single unit. Outer layer is a sheet of glass, middle layer a partially segmented sheet of polyvinyl butyral plastic, and the inner layer consists of four triangular shaped pieces of glass. The central area edges of these glass triangles register with the segmented edges of the plastic. Plastic layer extends beyond the glass edges and is bolted to window frame. When the outer plate of glass is broken by an explosion, the four segments of inner glass and plastic open like doors.

Although the outer pane of glass shatters, temporary repairs can be made by closing the four segments and holding them in place by many simple methods, even by using a wad of chewing gum. Crevices may then be closed with adhesive tape, putty, clay, chewing gum, etc.

The vinyl plastic will stretch up to 400% of its un-stressed length and return to within 1/2% without rupture. The windows have been tested and proved by using explosive forces greater than that revealed for the Hiroshima type atom bomb at a distance of a mile.

Window is also valuable for glazing and hoods in laboratories, arsenals, munitions plants and similar areas where explosion hazards are present.

(The Flexseal Bomb Window is a development of Pittsburgh Plate Glass Company, Dept. CP, 632 Duquesne Way, Pittsburgh, Pa.)

Synthetic human perspiration used in corrosion studies . . .

fills need for a standard corrosive in research on protecting machined parts with slushing oil

A light fingerprint on a carefully-machined part can damage it irreparably in just 24 hours. With large scale use of precision machined parts by industry today, this problem has become the focus of research in protective methods. "Slushing" oils are used to neutralize and remove fingerprints resulting from handling during the machining operations. Intensive research and development work is still in progress to provide better oils for this purpose.

Since natural human perspiration is difficult to standardize, varying as it does between individuals and in the same individual with metabolism changes and other unknown factors, a synthetic preparation resembling perspiration in its corrosive properties has been developed. This preparation is then used to determine corrosion rates for various metals and to test suggested formulations of slushing oils.

To date, the studies have shown that even heavy gloves and copious application of talcum to the hands do not give absolute protection against fingerprint damage. The dangers of damage from fingerprint corrosion are especially acute in Spring and Fall. Then abrupt changes in temperature in the typical machine shop at night can precipitate moisture from the air to activate crystals of quickly drying fingerprints deposited during the day. In cases like this irreparable damage can occur overnight.

Slushing oils are light, fluid and easily removable. They do not compare with products used for long term rust protection of finished parts. Since their initial use during World War II, consumption has risen to the present level of almost 50,000 (42-gal) bbl per year.

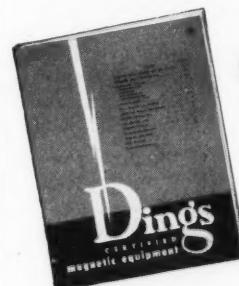
(Technical Service Dept., Socony-Vacuum Oil Company, Inc., Dept. CP, Brooklyn, N. Y.)



DINGS magnets offer a variety of ways to meet problems caused by tramp iron—problems such as fires, explosions, machinery damage or product purification.

One of these ways is the ideal way and its choice is a joint affair—yours and ours. Outline your application to Dings. You can rely on their unbiased recommendation.

The magnets listed are but part of a complete line of magnetic separators which includes magnets for chutes, ducts, wet applications or fully self contained units. For a description of the complete line . . .



Send For Catalog

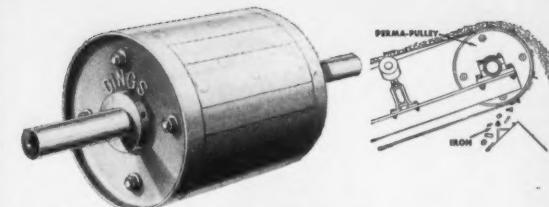
C-5000 A

In it can be found the answer to any magnetic separation problem.

DINGS MAGNETIC SEPARATOR CO.
4731 W. Electric Avenue, Milwaukee 46, Wis.

Dings

When inquiring check CP 5977 on handy form, pgs. 2-3



1. DINGS PERMA-PULLEYS

INTENSELY concentrated magnetic strength near the surface makes this the magnet to use where burden depths do not exceed 3". Installed as head drive pulley, tramp iron removal is fully automatic, simple. Non-electric, permanently energized it can be installed and forgotten. Catalog C-1007 A gives details.

Powerful, air-cooled electro magnetic pulleys are available for burden depths exceeding 3". Low operating cost, long life and extreme power characterize this work-horse of the Dings line. Catalog C-1001 A.



2. DINGS PERMA-PLATES

PERMA-PLATES are the simplest, most economical magnets available. Installed over the conveyor belt, they are extremely effective on shallow burden depths. Non-electric and permanent. Perma-Plates can be made self-cleaning. Catalog C-1205 A.



3. DINGS SUSPENDED RECTANGULARS

FOR the difficult jobs. Power close and power that searches down 12" to yank tramp iron out. Triple pole, double gap design gives edge to edge protection that can't be surpassed. Install horizontally, vertically or at an angle. Self-cleaning fully automatic models also available. Another model, the DEEP BURDEN Rectangular, is effective at distances to 18". Catalog 301-A.



4. DINGS MAGNETIC DETECTOR

THE Dings Magnetic Detector instantly signals when any magnetic object passes through the detector zone. Can be hooked up to sound an alarm and stop the belt, ideal where the infrequency of tramp iron does not warrant the use of a magnetic separator, or where heavily loaded, high speed conveyor belts make iron extraction magnetically an impossible task.



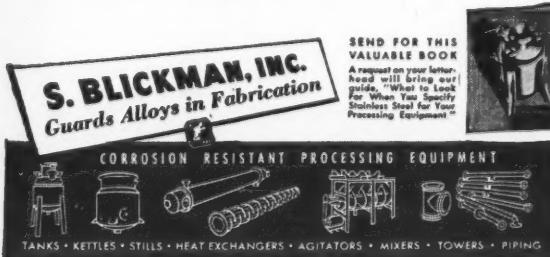
Well, Doc, how long will I live?

The service life of your stainless steel processing equipment is determined by your fabricator. In the professional skill of his mechanics, welders and craftsmen lies the answer to the useful life of that equipment.

For stainless fabrication requires a specialist—with manpower trained, experienced and equipped for that work. A general practitioner might miss up on something that would impair the strength or corrosion resistance of stainless steel. The special technique required for sound welds—the right degree of heat in welding a seam, the proper finish for your application—round corner construction to allow removal of corrosive materials—these often determine how long your equipment will "live" in service.

Years of working with stainless steel have shown us that many hidden weaknesses in the finished vessel can be avoided by proper methods of fabrication. For your next stainless steel vessel, consult with us.

S. BLICKMAN, INC.
708 GREGORY AVENUE
WEEHAWKEN, NEW JERSEY



When inquiring check CP 5978 on handy form, pgs. 2-3

IDEAS

O₂ mixed with air blast hastens steelmaking in Bessemer converter . . .

'blow' completed in one to two minutes less time than when using air alone for purifying

Mixing oxygen with the purifying air blast has enabled steelmakers to beat all past records for their fastest process—the Bessemer converter. With oxygen, a Bessemer 'blow' can be completed in 9 to 10 minutes, 1 to 2 minutes less than the normal time. Translated into practical terms, this means a bonus of 30 tons every 12 to 15 blows, or 60 tons for each Bessemer converter in an 8-hour day.

Still more important to steelmaker's standpoint, the use of oxygen makes it possible to charge at least 5 tons of scrap into the converter—2 tons more than on normal practice. This means a saving of pig iron, usually the fare of the fire-breathing Bessemer vessel, and consequently a reduction in the amounts of ore, limestone, and coke needed.

Experiments leading to this achievement were performed at National Works of National Tube Company, a United States Steel subsidiary, in McKeesport, Pa. In testing this method over a 4-month period, no change was noted in the quality of the steel and in no instance was the life of a converter lining shortened.

It was found that slightly more than 1% of pure oxygen added to the normal air of the blast was not only sufficient, but operated with the best results. This amounts to 4,000 to 6,000 cubic feet of oxygen for each blow. The most efficient rate of oxygen addition was found to be 1,000 cfm, and the most effective time for its introduction was during the first 4 minutes of that portion of the blow designed to remove carbon from the charge. This permits 2 or 3 minutes of end blowing without oxygen to avoid excessive over-oxidation of the metal and slag.

At National Works the blast is furnished by 3 turbo-blower units so connected that the blast from any one can be directed to any of the 3 Bessemer converters. Blast rates to each vessel range from 25,000 to 33,000 cfm at 25 to 30 pounds pressure.

About 500 feet from the converters is located the Driox station which furnishes the 99½% oxygen used for blast enrichment. Liquid oxygen is shipped into the plant in tank cars and transferred to a storage tank of 1.5 million cubic foot equivalent gas capacity, which in turn supplies three 50,000 cubic foot oxygen converters. The plant can deliver about 600 thousand cubic feet of oxygen daily, 200 thousand of which is available for use in the Bessemer converters under a line pressure of 125 psi.

(Summary of information received from United States Steel Corporation, Dept. CP, 208 S. LaSalle St., Chicago 4, Ill.)

FluoSolids system applicable to SO₂ production . . .

gas strengths of 14 to 15% SO₂ are obtained when roasting 48% sulfur pyrite

The Dorco FluoSolids System has been suggested as a means of roasting iron pyrite or zinc or copper sulfides to obtain SO₂ gas. This should be important to users of SO₂ and producers of sulfuric acid who are presently faced with curtailment of sulfur supplies.

Pyrite or pyrrhotite as flotation concentrate, or massive pyrites or pyrrhotite crushed to pass approximately 14 mesh, may be self-roasted by the process. Feed may



BLAW-KNOX Electroforged® STEEL GRATING & STAIR TREADS

When inquiring check CP 5979 on handy form, pgs. 2-3

TIME OFF FOR SCRATCHING?



a scratching worker **IS NOT** **an efficient worker**

Tarbonis

is available in
1-lb. and 6-lb. jars.

COMMON

SKIN IRRITANTS

- Cutting Oils
- Chrome Dyes
- Sodium Bichromates
- Lime
- Metal Dust
- Urea and Phenol
- Plastic Compounds
- Naphtha
- Detergents

THE TARBONIS COMPANY, Dept. CP
4300 EUCLID AVE., CLEVELAND 3, OHIO

PLEASE SEND ME A SAMPLE OF TARBONIS.

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ADDRESS _____

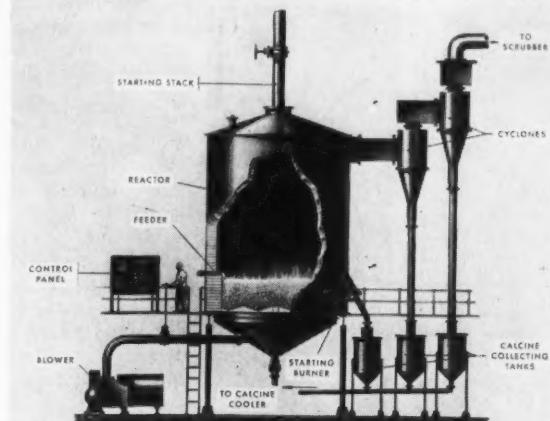
CITY _____ ZONE _____ STATE _____

BY _____ DEPT. _____

When inquiring check CP 5980 on handy form, pgs. 2-3

be introduced substantially dry or as a slurry repulped to about 80% solids, depending upon local conditions. Calcine can be quenched in water for sluicing to waste or process, or caught dry and cooled to handling temperature, as desired.

When roasting 48% sulfur pyrite at 900°C with minimum of excess air, gas strengths up to 14 or 15% SO₂



Cutaway view of Dorco FluoSolids System as applied to SO₂ production

are obtained and a maximum of 1½% total sulfur is left in the calcine. Under these conditions, SO₃ formation is held to a minimum. With pyrrhotite, gas strength is 12 to 13%, depending upon analysis of raw material.

Roasting temperatures are accurately controlled to avoid sintering and to minimize formation of ferrites or base metals if present. If calcine is to be used for steel making, any desired amount of sulfur can be left in calcine to act as sinter fuel. Or, if copper or zinc content is too high for steel making, the roast can be conducted so as to sulfate the copper and zinc, after which these metals can be leached out to meet desired specifications.

There are no moving parts within an FS reactor. Manufacturer reports lower investment and operating costs than with conventional roasting methods.

(The Dorr Company, Dept. CP, Barry Place, Stamford, Conn. . . . or for more information check CP 5981 on handy form, pages 2 and 3).

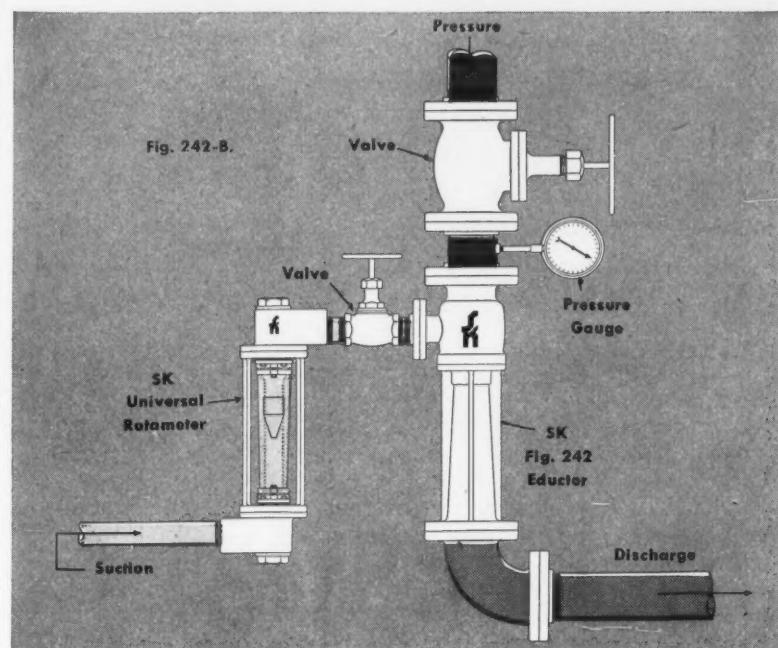
Heavy-media flotation for coal reviewed

Completely covering the process of coal preparation by heavy-media separation, this 36-page book is well illustrated with photographs, flow sheets, and drawings. Covered in text are the operation and basic flow sheet of the process. Seven actual installations are considered, and modifications in these are clearly pointed out. Another section deals with five types of equipment supplied by various manufacturers. A bibliography of related material is given.

Manufacturer reports that this method yields closely reproducible results, handles a wide gravity range, cleans the full size range, uses only a small labor crew, and has many other advantages. "Heavy-media Separation Processes for Coal Preparation," is issued by Mineral Dressing Div., American Cyanamid Co., Dept. CP, 30 Rockefeller Plaza, New York 20, N. Y. When inquiring specify CP 5982 on handy form, pages 2 and 3.



HERE'S AN EASY WAY TO MEASURE AND MIX LIQUIDS INTO CONTINUOUS STREAMS

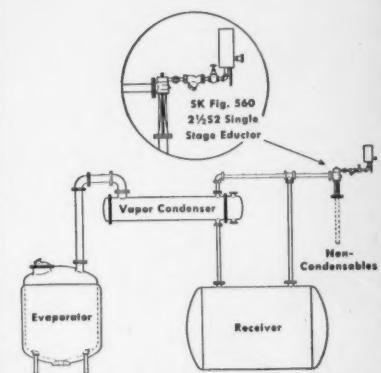


THE system above is simplicity itself. It consists of a SK Rotameter and a SK Jet Eductor. It represents only one of numerous possible variations. With this system, you can mix two liquids in desired proportion in one continuous operation.

Flow of the pressure liquid is controlled by a valve and the orifice of the eductor nozzle. The pressure liquid passes through the eductor nozzle with sufficient velocity to draw in and entrain the suction liquid. Rate of flow of the suction liquid is measured by the Rotameter and controlled by a valve in the suction line. Both liquids are thoroughly mixed within the eductor and are discharged through the discharge line. The mixing ratio remains constant as long as the pressure is held constant.

Of importance is the fact that the eductor has no moving parts—the Rotameter but one, the rotor. Maintenance, therefore, is low. Operation is consistently efficient. In addition, the eductor can be made of special materials to handle corrosive liquids. The system is flexible. Additional liquids can be mixed by extending the system. SK Controlling Rotameters can be used in pressure and suction lines to proportion flows under changing conditions.

The SK Rotameter and Eductor illustrated are stock items, immediately available. Many other types and a wide range of sizes of both are offered. For details on Jet Eductors, request Bulletin 2-M. For information on all types of Rotameters, request Bulletin 18-RA. We'll send you either or both, promptly.



ACID RECOVERY UNIT SAVES COMPANY MONEY

Story by courtesy of The Pfaudler Company

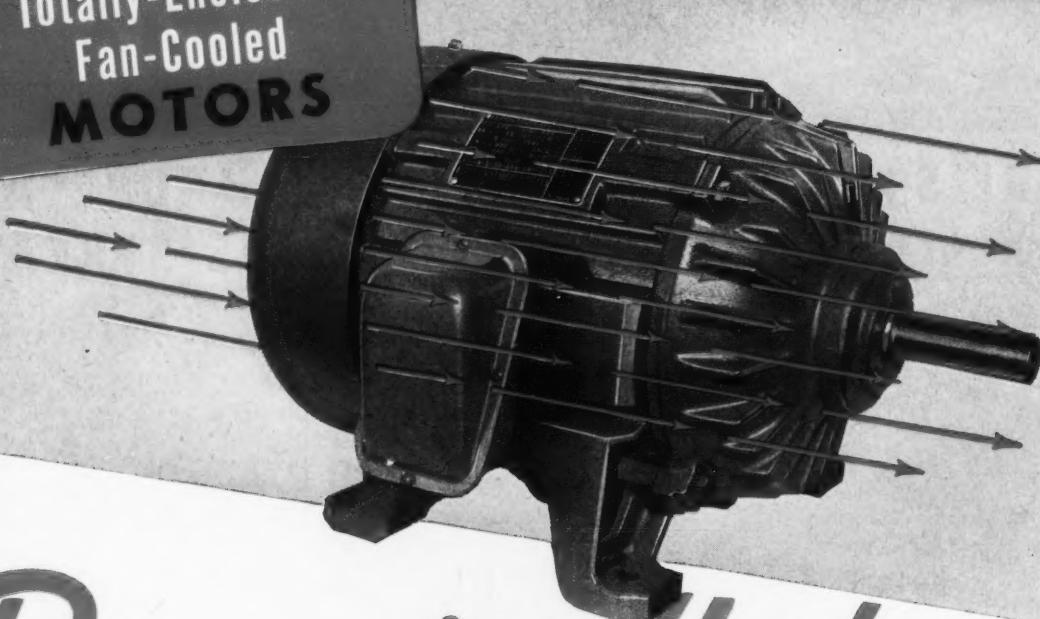
A large automotive parts manufacturer saves \$50.00 a day with the installation pictured. It's a glass lined vacuum concentrator for recovering chromic acid and it was built by The Pfaudler Company, Rochester, N. Y.

Asked to suggest a method for recovering the acid used to wash automotive parts after a plating bath, Pfaudler Engineers recommended and installed this unit. Stainless steel and glass lined components are used to resist corrosion. A SK Fig. 560 Single Stage Jet Exhauster is used to maintain 26" Hg. vacuum in the system while removing non-condensables.

For details on the complete system, write to The Pfaudler Company. For details on SK Exhausters, write to SK for Bulletin 5-EH.



ALLIS-CHALMERS
Totally-Enclosed
Fan-Cooled
MOTORS



Blows itself clean as a Whistle!

DIRT IS CARRIED AWAY by cooling air blown over the ribbed cast iron frame and bearing housings of this new Allis-Chalmers tefc motor. That means less motor cleaning . . . inspection . . . overhaul!

Concealed air passages and pockets have been eliminated. Dirt can't build up to cause overheating. And as for oily dirt that sticks — just wipe or blow it off.

Studies show that on most applications, totally-enclosed fan-cooled motors more than pay back their extra cost in reduced maintenance. And this new Allis-Chalmers Type APZ tefc motor makes maintenance costs lower than ever before.

A-3427

Rigid Construction

The frame is cast iron which has high resistance against corrosion and distortion. Bearings are pre-lubricated at the factory and should need no attention for years. Tapped holes with pipe plugs to permit regreasing and to provide grease relief are standard equipment.

Get All The Facts

The new Allis-Chalmers Type APZ totally-enclosed fan-cooled motor is built in all NEMA standard frame sizes from 224* to 505. Also in explosion-proof type. Your A-C Authorized Distributor or District Office has complete information. Call today, or write Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 51B7225.

Texrope and Vari-Pitch are Allis-Chalmers trademarks.

ALLIS-CHALMERS



When inquiring check CP 5984 on handy form, pgs. 2-3

IDEAS

Temp conditions "tailor made" in pilot equipment . . .

semi-flexible electric heating tubes fitted and attached to spot where needed

Many installations of process equipment are unevenly or unpredictably heated. Platen presses, molten salt pipe connections, and especially pilot plant equipment are typical examples. In

many cases, steam jacketing or gadgets devised on the spot can remedy these conditions temporarily. But where a permanent heat source is needed in specific locations, this packaged electrical heating unit can be used to advantage. The illustration shows an application of these electric heaters on a pilot catalytic cracker at a major Texas oil company. In this installation quick heat, easily duplicated up to 1100°F is available.

The Chromalox aloy-sheathed tubular heaters are evenly spaced in vertical positions and completely surround the cracking vessel. Stainless steel bands hold them snug against the surface. In cross section, each tube is triangular to assure good footing.

Insulation was placed over the column and heaters after this photograph was made. Near the top the tubes have been bent to conform to the shape of the column. Heaters are available in many alloys and wattages for service up to 1400°F. They can be formed to fit a wide variety of equipment.

Source: Chromalox electric tubular heaters are a development of Edwin L. Wiegand Company, Dept. CP, 7517 Thomas Blvd., Pittsburgh 8, Pa. . . . or for more information check CP 5985 on handy form, pages 2 & 3.

Rejuvenates glass-lined tanks with stainless steel liner . . .

cost of service is 50 to 65% the cost of new tank "Worn-out" glass-lined tanks are being salvaged at 50 to 65% of the cost of a new tank by a unique service offered to industry. Company offering the service picks up old tank, fabricates and fits in a No. 14 or 12 gauge polished stainless steel liner, tests the liner, replaces insulation if any, and returns to customer. In the case of closed vessels, one head is removed during repair and is then replaced.

During the process, openings can be changed, and holes and agitators modernized where such is desired. Finished tank is said to be equal in quality to a new tank.

(Service provided by Walker Welding & Machine Company, Dept. CP, New Lisbon, Wis. . . . or for more information check CP 5986 on handy form, pages 2 and 3.)

IDEAS

Selection of proper detergent factor in maintaining waxed composition floors . . .

tests reveal excessive removal of wax by wrong agents

The growth of the use of composition floors in heavy traffic areas in industry has centered attention on the problem of their maintenance.

Among the best methods have been those based on application of a wax coating, combined with proper cleaning at regular intervals thereafter. Much emphasis has been placed on wax application, but it is just as important that the cleansing agent be one which will remove dirt yet maintain, or enhance, the appearance of wax. Washing floor with a good detergent should precede application of first coating, followed by flushing. This prevents dirt being trapped in the wax. When proper cleansing is first observed, other methods of preservation, like sealing, can be omitted.

Wax should be applied according to manufacturer's directions. Better sanitation will be achieved and the wax surface maintained if proper detergent is used with wet mop.

Effects of good detergents compared with improper ones have been clearly demonstrated under controlled conditions when sections of waxed floors were washed with different kinds of detergents.

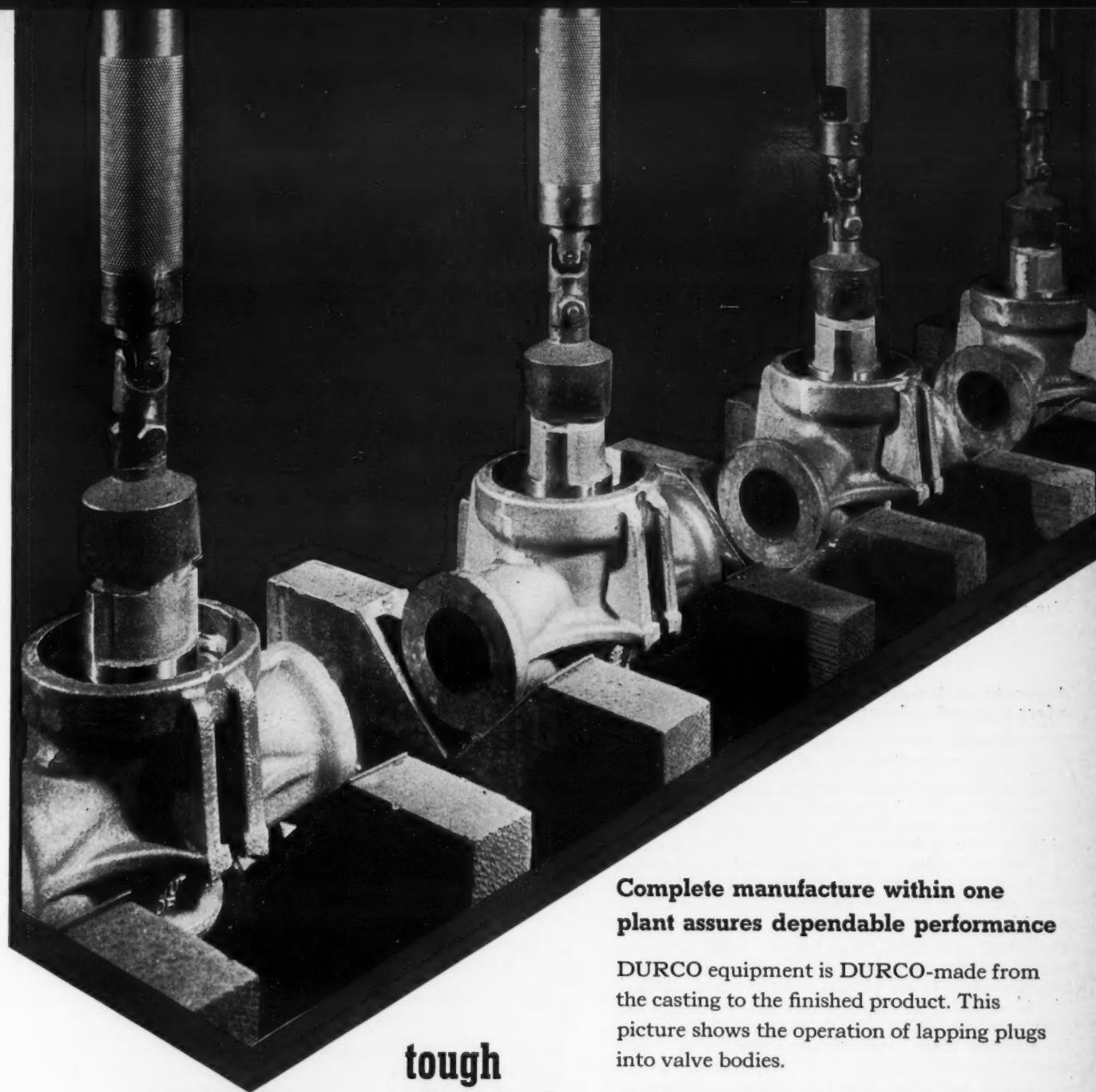
A series of cleansing tests were made which approximated two months of service. Where improperly compounded detergents were used, gloss meter tests showed that wax was completely removed during the first washing, leaving the floor unprotected. In cases where a concentrated neutral synthetic detergent was properly diluted and applied, gloss meter tests showed that much of the original wax was left and that the flooring still had a protective film of wax. The number of times a floor should be cleaned depends on how heavy the traffic is, but in each case, selection of proper detergent is a vital factor.

(Summarized from a report by Dr. Ralf B. Trusler, Director of Research, Davies-Young Soap Co., Dept. CP, Dayton, Ohio.)

Wrapping machined parts

Using paper impregnated with a vapor rust preventive saves 70 to 90% of the time required to pack and unpack machined parts in grease. (Chemical Digest — Foster D. Snell, Inc., New York 11, N. Y.)

For more information on product at right, specify CP 5987
see information request blank between pages 2-3.



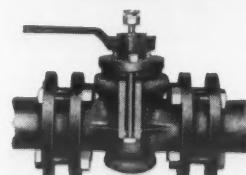
Complete manufacture within one plant assures dependable performance

DURCO equipment is DURCO-made from the casting to the finished product. This picture shows the operation of lapping plugs into valve bodies.

DURCO engineers are ready to work with you on any problem of handling corrosive solutions. With materials in short supply, the experience of these engineers may help in selecting less critical alloys for your requirements.

Call the DURCO engineer in your area, or write

**THE DURIRON COMPANY, INC.,
DAYTON 1, OHIO**



The DURCO Type D Plug Valve

**tough
chemical
service
calls for
DURCO
equipment**

Pipe size limits trap capacity . . .

no practical value to making trap orifices as large as pipe diameter

Some years ago there was a demand for a trap with a discharge valve equal in diameter to the pipeline itself. To some, the answer to this demand might be immediately obvious. Armstrong Machine Works, however, thought it would be interesting to work it out. Calculations showed why there is no point in such a trap, and that it is a waste of money.

Consider a 2½" pipe with a 2½" trap valve. Here, the pipe size limits the trap capacity. In other words, while a trap might pass 216 cfm, the pipe itself will only pass 102 cfm, for example.

Consider next a 3" pipe with a 2" trap valve. Here, the trap limits the capacity of this combination. In practice, by enlarging the pipe size, the pressure drop due to friction in the pipe is cut down. This condition has the effect of raising the pressure at the trap and thereby increasing the trap capacity.

Moral to the story — rather than build the trap orifice up to pipe size, simply enlarge the pipe size.

(Summary of information from "Armstrong Trap Magazine", No. 3, 1951, Armstrong Machine Works, Dept. CP, Three Rivers, Mich.)

Ammonia made from natural gas offers economic advantages . . .

hydrocarbon gases find increased use as source material for ammonia synthesis raw gas

A method for production of ammonia gas from steam and natural gas is indicated as being cheaper than the commonly used process which utilizes coke or coal. It was the subject of a paper delivered before the American Institute of Chemical Engineers at its recent Midwest Regional Meeting at Kansas City. The author developed the economic reason for using hydrocarbon gases as a source of material.

The use of solid carbonaceous fuel and water vapor has been in the past the more accepted method of obtaining hydrogen, through use of gas producers for gasification of coke with coal or steam. More recently, hydrocarbon gases have been employed in the production of hydrogen for ammonia plants, and the reason for this is purely economic.

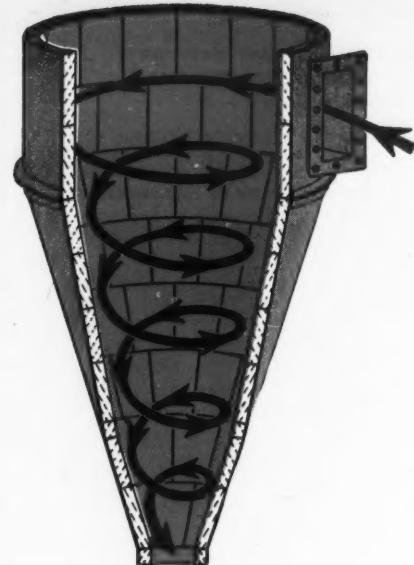
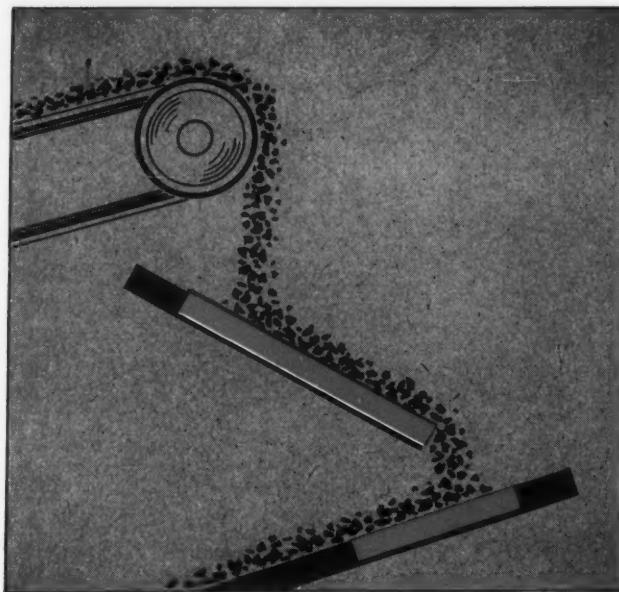
To produce the hydrogen necessary for one short ton of ammonia requires approximately 35,000,000 Btu. Translating this into the cost of raw materials or energy, it is equivalent to 10,450 kWh per ton of ammonia using electrolytic process or 1.4 tons of average coke per ton of ammonia, or 35,000 cu ft of natural gas/ton ammonia.

With natural gas selling at 20c per 1,000 cu ft, coke would have to cost \$5.00 per ton and electricity 7/10 mills per kWh to be competitive. This cost ratio has stimulated the development of processes for the conversion of hydrocarbon gases, chiefly natural gas, into hydrogen.

While the hydrocarbon gases may be processed with oxygen alone to produce hydrogen, the reacting of hydrocarbon gases with steam has the added advantage of obtaining hydrogen both from the reacted gas and the decomposed steam.

Two methods are available for carrying out this latter reac-

abrasion?



erosion?

Here are even tougher

The weak link in keeping certain equipment on the production line often lies in rapid abrasion and erosion of vulnerable areas. For example:

In Cyclone Dust Collectors where there's a ceaseless blast of highly abrasive particles.

In Coke Chutes and Hoppers which must withstand constant cascades of fiery coke or cold coke.

In Hot Blast Mains through which dust-laden gases travel at high velocities.

In Billet Heating Furnaces through which hundreds of massive metal slabs are pushed.

Under conditions like these, metals, paving bricks and other normally durable materials are simply worn away — and in very short order. It takes exceptionally tough linings or

bearing surfaces — as provided by our MONOFRAK K fused cast blocks or our CARBOFRAX silicon carbide bricks and shapes — to stand the gaff.

Both these Super Refractory materials by CARBORUNDUM are within one index point of diamond hardness! It is this hardness that gives these Super Refractories their exceptional resistance to abrasion — from room temperature to high heats.

Granted, abrasion is seldom an isolated condition. It's usually abrasion *plus . . .* heat, or acid attack, or some other condition. But, as you can see (top, opposite page), these Super Refractories have many other properties, equally as desirable as abrasion resistance and equally important in certain applications.

Information is now available on all the various groups of Super Refractories by CARBORUNDUM. Just send the coupon and you'll receive our new booklet. No obligation, of course.



THE CARBORUNDUM COMPANY

Refractories Division

"Carborundum," "Carbofrax," "Monofrax" and "Alfrax" are registered trademarks which indicate manufacture by The Carborundum Company.

Perth Amboy, New Jersey

SUPER REFRACTORIES ARE ALSO USED

WHERE HEAT CONDUCTIVITY IS NEEDED. At elevated temperatures CARBOFRAX refractories conduct heat as rapidly as chrome-nickel steels! This characteristic is invaluable in checkers, muffles, hearths, etc.

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WHERE STRENGTH IS IMPORTANT. No commercial tonnage refractories have greater strength than Super Refractories. All can withstand over 300 psi at 2750° F without crushing.

WHERE HIGH HEAT IS INVOLVED. They can be safely used at temperatures over 3000° F. They are very durable — are highly resistant to spalling and cracking. Some varieties are almost indispensable where flame impingement or violent temperature changes are present.

WHERE INSULATION IS NEEDED. One of these products, ALFRAX BI aluminum oxide material, consists structurally of many hollow spheres. It's one of the best insulating materials at very high temperatures.

WHERE SPECIAL SHAPES ARE INDICATED. Practically all Super Refractories are available either as bricks or special shapes molded to close tolerances — including fitted joints, tubes, etc.

Do any of these suggest possible applications?

materials of construction than grinding wheels

The important thing about Super Refractories by CARBORUNDUM is NOT just that they are "better" than standard fireclay refractories. The important thing is that they are actually *a class apart* — with many entirely different properties and applications. (For example, some of their properties — such as abrasion resistance — are important *regardless of whether high temperatures are involved*.)

Nor is their principal value simply that they cure trouble-spots where other materials (e.g., refractories, metals, etc.) fail to stand up. Their value usually lies in increasing capacity and re-

ducing overall operating costs. (For example, regenerator checkers made of CARBOFRAX brick absorb and release over 3 times as much heat as checkers made of ordinary refractories when cycles are short.)

WHY NOT CHECK UP? We have a new booklet which outlines the unusual characteristics of these special purpose materials. The coupon will bring you the story — or one of our engineers would be happy to talk over your specific problems. We believe it could be mutually profitable.

This advertisement — one of a series — is presented in the belief that in the unusual properties of the various Super Refractories by CARBORUNDUM lies the key to many new or improved processes. We would like to talk over specific jobs with anyone who sees such possibilities.



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Please send your free booklet on properties of
Super Refractories

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Position _____

Company _____

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City _____ Zone _____ State _____

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IDEAS

tion: 1) the thermal cracking of hydrocarbons in the presence of steam, and 2) the catalytic reforming of hydrocarbon gas with steam.

The thermal cracking of hydrocarbons involves the use of high temperature refractories and processes which have been costly to build and expensive to operate. For this reason, the catalytic method has become almost universally accepted in reforming hydrogen gas to obtain hydrogen.

In its conclusion, the paper emphasized that from all indications, hydrocarbons, as long as they are available, are going to play a steadily increasing role in supplying the source material for ammonia synthesis raw gas. The use of the catalytic process, due to the simplicity of its design and operation, will continue to be the accepted method of processing these gases into acceptable gas for the synthesis of ammonia.

(Summarized from paper by H. A. Tuttle, Chemical Construction Corp., Dept. CP, 488 Madison Ave., New York, N. Y., delivered before the American Institute of Chemical Engineers.)

Test for wearing properties of asphalt road surfacing added to atomic list . . .

water erosion and leaching method is made accurate with radioactivity

Most existing methods for testing the wearing properties of asphalt road surfacing rely on visual estimation of the exposed surface. This method is based on the fact that water erosion can loosen the crushed stone or gravel topping by wearing away its plastic matrix. Tests are difficult to make quantitative and are thus subject to error.

Laboratory tests indicate that by employing radioactive material accurate measurement can be made. Present method consists of coating the gravel or stone with an extremely small amount of radioactive calcium chloride prior to imbedding it in the asphalt material under test. The salt emits only soft beta rays. Coated stone is then subjected to the action of water under standard conditions until the wash water begins to show radioactivity. This point fixes the initial failure of the coating.

As the test continues, a direct relation is established between the radioactivity of the water and the amount of stone that has been uncovered by the action of the water. Test has been used to indicate the permanence of various coatings and show the effects of additives and different asphalt stocks.

(The Atlantic Refining Company, Philadelphia Research Labs.)

What Are You Working For?

(Continued from page 4)

home are fully as great as any threats we face from Stalin abroad.

These are not partisan matters — questions of parties, questions of Republicans or Democrats or anything. They are national questions. For they involve the survival of America and the peace of the world and all that we love.

Abandon the process of reducing this country to the level of world socialism. Try instead to lift the standards of this nation as well as the rest of the world instead of bringing us down to where others are — for that is the effect of what is going on.

For, if America blows up the world blows up. Then who is there to pick up the pieces but Stalin.

CORROSION CHECKED IN CAUSTIC LIQUOR LINES ...AND ELSEWHERE

...WITH 18-8 MO TRIMMED CRANE ALLOY CAST IRON GATES

These Crane low nickel alloy cast iron valves give excellent results in many services where conventional "all-iron" and "brass trimmed" valves fail because of corrosive conditions. Today, they are also finding wider application on mildly corrosive services, or services where some corrosion is permissible, as substitutes for the more expensive, hard-to-get, all 18-8 stainless steel valves. In design and in materials, Crane No. 14477 valves have many value-adding features like these:

STEM THREADS ARE OUTSIDE VALVE BODY—not exposed to erosive and corrosive effects of line fluids; simplifies thread lubrication.

ACCURATE, TIGHT SEATING—extra long disc guides keep disc travel true; minimize drag on seating surfaces. Screwed-in shoulder type body seat rings do not loosen in service.

PROVED CORROSION-RESISTANT MATERIALS—Body seat rings, stem, and disc faces are 18-8 Mo; packing gland is nickel-plated steel; body, bonnet, and disc are nickel low alloy cast iron.

EXTRA RESISTANCE TO LINE STRAINS assured by tie ribs between end and bonnet flanges. Husky body-bonnet flanges use more bolts of smaller diameter to equalize pressure on gasket for maximum safety and tightness.

FOR COMPLETE INFORMATION about these readily available, widely applicable corrosion-resistant valves, see your Crane No. 49 Catalog, p. 375—or ask your Crane Representative for service recommendations and specification data.



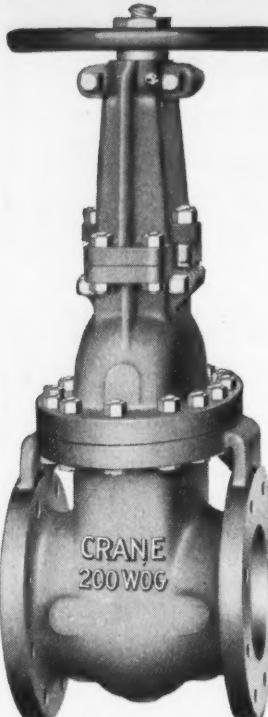
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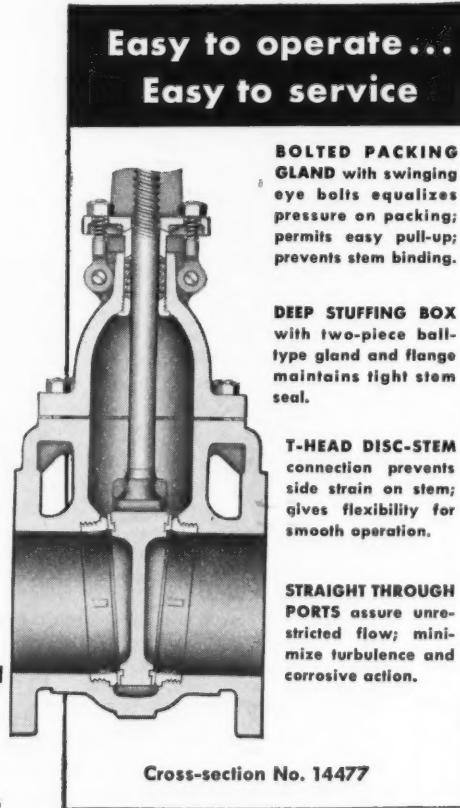
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Working Pressure: 200 pounds
cold water, oil, or gas.
Sizes: 2 to 12 inch. Flanged Ends.



Briefs . . .

Hydrogen attack of steel in refinery equipment

Paper contains information and data obtained in a survey of refinery processing equipment. Discusses mechanism of hydrogen penetration and cites varied results arising from such penetration. Comments on materials of construction as related to hydrogen attack. Plant operating conditions are surveyed with reference to hydrogen attack. Testing instruments and technique are described and discussed. 13 pages, 31 figures. ("Petroleum Refiner," May 1951, page 132)

Determination of uranium by X-ray fluorescence

Authors investigated this method for determining uranium and compared the results with those resulting from X-ray absorption. Specimen preparation, technique and results are stated. 3 pages, 4 figures. ("Analytical Chemistry," May 1951, page 707)

Thermal conductivity of gases

Authors report the techniques and equipment used and the results attained in measuring the thermal conductivity of nitrogen, methane, argon, hydrogen, helium, ethylene and carbon dioxide. Pressures used ranged from 1 up to 200 atmospheres. Results are tabulated for specific temperatures and various pressures. 9 pages, 9 figures, 9 tables. ("Chemical Engineering Progress," May 1951, page 223)

Cathodic protection with conventional paint systems

Deals with those instances where cathodic protection augments the protection afforded by a conventional paint coating. Illustrative calculations show values for the necessary potential. Examples are cited for a number of diverse applications. 4 pages, 3 figures and 3 tables. ("Paint & Varnish Production," May 1951, page 8)

Radiant heating for the petroleum industry

Article deals with a method of radiant heating applied in petroleum processing. Furnaces, burners, and method of installing these are described. Design and installation results in easy maintenance. Data are tabulated for a radiant furnace test. Effect of excess air on fuel cost is shown graphically for various costs per M Btu from a cost of 5c up to 40c per M Btu. Comparative data are tabulated for a radiant and a box furnace. 4 pages, 2 tables, 4 figures. ("Petroleum Refiner," May 1951, page 103)

Dispersions in gases

Symposium consists of eleven papers relating to the general subject. By title these papers are: Shatter of Drops in Streams of Air; Droplet Size Distribution in Sprays; Droplet Transfer from Suspending Air to Duct Walls; Preparation of Solid- and Liquid-in-air Suspensions; Aerosol Build-up Techniques; Dry Fibrous Air Filter Media Performance Characteristics; Operation of Cottrell Precipitators; Collection of Aerosols in a Venturi Scrubber; Per-

from contemporary publications

Here's a quick look at interesting articles, appearing in other publications . . . as selected by Technical Editor, H. McCormack

formance of Wet Cell Washers for Aerosols; Electronic Spray Analyzer for Electrically Conducting Particles; Fitting Bimodal Particle Size Distribution Curves. 68 pages, 102 figures, 50 tables. ("Industrial and Engineering Chemistry," June 1951, page 1312)

Porcelain enameling on steel

Author reviews history of the process, comments on the composition of the enamels customarily used, discusses the complexity of manufacturing an enamel frit, and states how the frit is processed to be applied to the steel and how the surface should be prepared for enameling.

Described are various steps in applying enamel to surface which is to be enameled and how the fusion of enamel to metal is accomplished. 7 pages. ("Mechanical Engineering," May 1951, page 386)

Determination of traces of water vapor in gases

A method is described which is generally applicable for the determination of water in condensable gases. Calibration methods described and apparatus and techniques are described and discussed. Fifteen minutes are required per determination. Range of application is 0.001 to 0.1 volume % of water vapor. 3½ pages, 3 figures, 1 table. ("Analytical Chemistry," May 1951, page 736)

Treating refiner chemical wastes

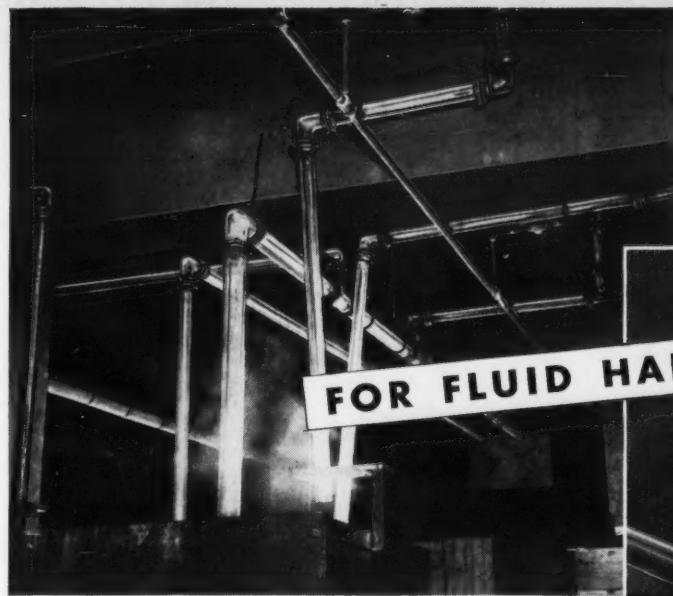
Author describes a treating plant where the waste waters are colored, may be either acid or alkaline, contain water soluble sulfonic acids and sometimes emulsified oil. Collecting system and treating plant are described; a flow sheet is included. Bases upon which treatment was planned are discussed. Properties and volumes of waste waters are tabulated, as are operating data of water treating plant. 4 pages, 3 photos, 1 figure, 2 tables. ("Petroleum Processing," May 1951, page 492)

Cleaning production lines with power brushes

Author discusses the use of various types and shapes of power brushes in economically cleaning up production lines. Comments specifically on conveyor chains and cylindrical parts; states cleaning is done in minimum time and handling and without stopping moving parts. 2 pages, 5 photos. ("Plant Engineering," July 1951, page 66)

Infrared spectra of phosphorus compounds

Authors present the infrared spectra of sixty phosphorus compounds. Methods used are described and discussed. 16 pages, 62 figures, 9 tables. ("Analytical Chemistry," June 1951, page 853)



FOR PROCESSING LINES—There is almost no limit on the use to which Pyrex brand Glass Pipe can be put for processes involving corrosive liquids.

FOR DRAIN LINES—Pyrex brand Glass Pipe is excellent for laboratory drain lines, waste acid lines or permanent distilled water lines.



PYREX brand "DOUBLE-TOUGH" GLASS PIPE

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When pipe corrosion is a problem, PYREX brand "Double-Tough" glass pipe may easily be the best... and most economical solution. For most acid solutions there is no piping material more resistant; it is virtually unaffected by neutral solutions and it is practical for many alkalies. Whether used for transfer lines, drainage lines or heat exchange, PYREX pipe will give long trouble free service. Some lines have been in service for over ten years without replacement of a single part.

PYREX pipe gives you more than corrosion resistance. Its high chemical stability protects against product contamination. It has the smoothest surface of any piping material, thus preventing sludge accumulation. Its high heat resistance permits quick change from hot to cold solutions—and PYREX brand glass pipe is the only pipe that per-

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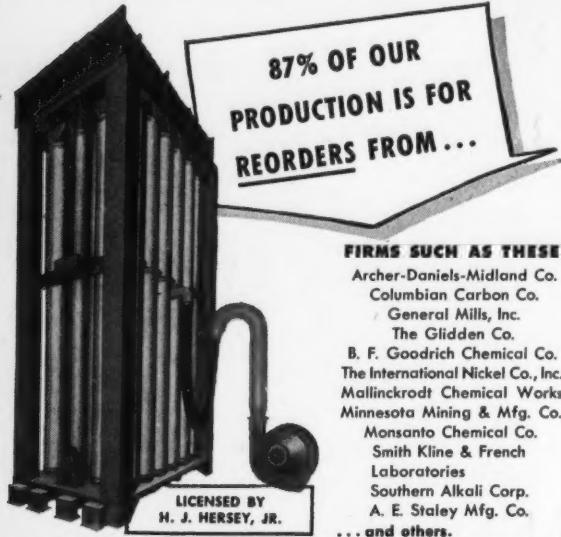
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The soundness of the Day Type "AC" Dust Filter principle, effecting outstanding efficiency of operation with minimum maintenance, is verified by industry itself. 87% of our production of Day Type "AC" Dust Filters is channeled to meet the demands of users who are witnessing the results in their own plants—and reordering.

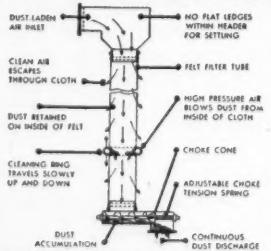
FEATURES OF THE DAY TYPE "AC" FILTER

- **CONTINUOUS-AUTOMATIC OPERATION**... the use of slow traveling, reverse jet cleaning rings gives automatic-continuous operation without shutdowns for cleaning.
- **CONSTANT AIR VOLUME**... the back pressure of DAY Dust Filters rises slightly when first started, then levels off to assure constant air volume.
- **PARALLEL AIR FLOW**... in the DAY Dust Filter, dust and air travel downward together.
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- **HIGH CLEANING EFFICIENCY**... with reverse jet cleaning, high grade filtering materials can be used because the action is gentle yet positive. Reverse jet rings move up and down, cleaning continuously.
- **NO DUST-CATCHING LEDGES**... DAY TYPE "AC" FILTERS, with a pattern of square-to-round inlet fittings, have no flat surfaces where dust can accumulate and become contaminated.
- **OUTSTANDING ADAPTABILITY**... units can be furnished with multiples of 4 tubes; housed or un housed (see illustration); can be applied for either pressure or vacuum.

SCHEMATIC OPERATING DESIGN

The reverse air jet mechanism provides uniform cleaning over the entire length of the tubes, and operates with a maximum cloth area loss of only 1 1/4% at any time. Air volumes remain constant and there are no cleaning shutdowns to cause high back pressures and sharp air volume variations.

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Page 74

BRIEFS

Acetone numbers of thermally polymerized drying oils

Paper covers part of an investigation designed to supply a basis for correlating the properties of these oils with their performance as coating vehicles. Acetone number is defined and its use explained. Technique of the test is commented on. Modifying factors are enumerated. Acetone numbers of various oils were determined at definite stages in the bodying process. Data is shown in tables and by graphs. 5 pages, 5 tables, 5 figures. ("Journal American Oil Chemists Society," April 1951, page 141)

Industrial experiences with synthetic lubricants

Authors comment on the fields in which use of synthetic lubricants have been found to be most applicable. Cites several specific cases. Tabulates the properties of representative synthetic lubricants. Comparative costs and performance are included although cost data are omitted. 8 pages, 11 tables, 6 figures, bibliography. ("Mechanical Engineering," June 1951, page 469)

Hydrogen attack on steel

Paper covers the results of a survey of petroleum processing equipment for hydrogen attack. Six operations are listed in which attack is most likely to occur. Instruments and testing methods used in locating presumptive areas for hydrogen attack are described. Corrective measures are discussed. Their application on one refiner, with results, is described. 4 pages, 3 figures. ("Petroleum Processing," May 1951, page 500)

Effect of temperature on extraction rate

Authors in an experimental study report on the effect of temperature on the extraction rate of crude lipids from oil seeds. Experimental procedure is stated and results are tabulated and graphed. Application of the data is commented on and a hypothetical plant case is used as an illustration. 3 1/2 pages, 2 tables, 3 figures. ("Journal American Oil Chemists Society," April 1951, page 149)

Thermal conductivity of solids involving flowing gases

Authors present research data on flow of heat from air flowing downward through radially cooled beds of granular solids. Solids included five sizes of Celite cylinders and two sizes of Celite pellets. Flow rates were from 75 to 3700 lb/hr/sq ft; bed dimensions were varied from 3.75" diameter and 12.5" long to 1.37" diameter and 6.43" long. Inlet air temperatures ranged from 75 to 800°F.

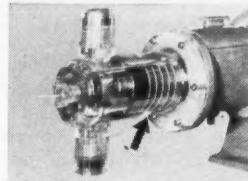
Equipment and operating techniques are described. 8 pages, 10 figures, 9 tables. ("Chemical Engineering Progress," June 1951, page 295)

Properties of non ionic detergents

Authors present research data on the properties and characteristics of some non ionic detergents developed in their laboratories. Physical properties are tabulated. Various characteristics such as surface tension, interfacial surface tension, foaming properties in distilled water, effects of

Du Pont plastic superior to all other gasket and packing materials in chemical inertness

Du Pont "Teflon"** tetrafluoroethylene resin inert to practically all chemicals, serves up to 500°F., has unique non-adhesive properties.



Uses: Gaskets; packing for pumps, valves, pistons, agitators; non-adhesive surfaces for use with sticky materials; electrical insulation.

Features: Inert to all chemicals except molten alkali metals and fluorine under extreme conditions, has zero moisture-absorption, serves at temperatures from -320°F. to 500°F., has extremely low coefficient of friction. Tough, resilient "Teflon" outlasts other gasket and packing materials as much as 300 times in some cases. Because of its unusual non-adhesive properties, the tackiest materials show little tendency to stick to "Teflon." It also has outstanding electrical properties.

Description: Du Pont supplies as molding powder, tape, and aqueous dispersions.

Demand for "Teflon" currently exceeds supply. However, we suggest you investigate its versatile properties for future application. We'll gladly discuss the availability of quantities for development work, and supply names of molders and fabricators of sheets, rods, tubes, or finished parts. For further information and booklet "Teflon" in Gaskets and Packing," write:

Source: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Dept., Wilmington 98, Delaware.

*REG. U. S. PAT. OFF.



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... THROUGH CHEMISTRY

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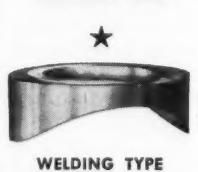
STUDDING OUTLETS

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Welding type studding outlets in wide range of sizes and ASA standards, and riveting type in 150lb. and 300lb. Standards are detailed in Catalog 9-49.

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CHEMICAL PROCESSING

temperature and concentration on whiteness retention, and effects of water hardness are shown in graphs. 6 pages, 2 tables, 11 figures. ("Journal American Oil Chemists Society," July 1951, page 294)

Uranium in solution by X-ray absorption

Author reports the results of analytical work on uranium solutions. Identifies an instrument, an absorption cell and a method of procedure which has an accuracy of plus or minus 0.05 gram per liter in concentrations up to 10 gram per liter. Comments on the elements which, if present, do not interfere with determination and states those which, if present, do interfere. 2½ pages, 3 figures, 2 tables. ("Analytical Chemistry," May 1951, page 705)

Present status of air pollution research

Author discusses the complexities involved in the study of an air pollution problem and states factors to be evaluated in attaining a satisfactory solution. Techniques and instrumentation required in studying air pollution are covered. Includes an extensive bibliography. 6½ pages, 8 figures. ("Mechanical Engineering," May 1951, page 405)

Chemical plant operations and the weather

Author discusses the housing vs. the outdoor installation of various types of chemical processes. Writer has extended observation of plants from North to South and from Central to West Coast states. Those units best suited for outdoor operation and those which should be housed are commented on. 6 pages, 22 photos. ("Chemical Engineering Progress," June 1951, page 277)

Armored vinyl tubing

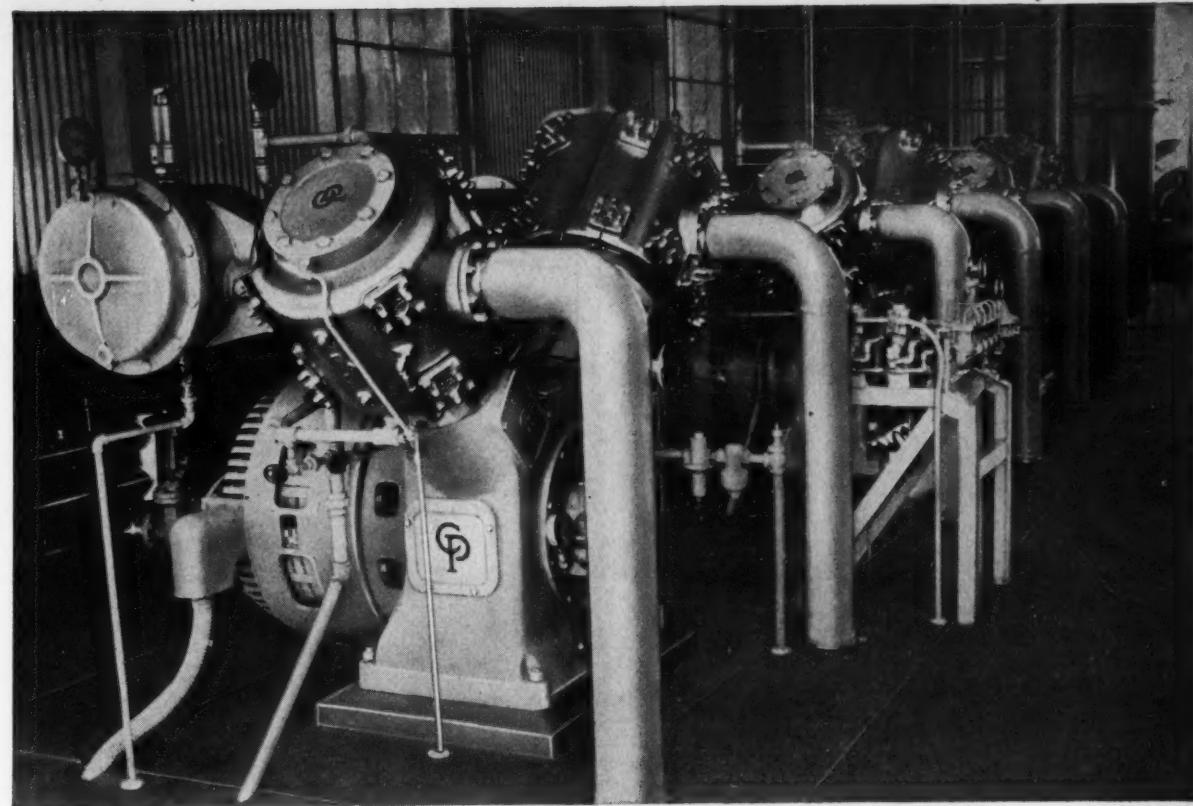
Article describes a recently developed tubing of vinyl plastic which is sheathed with braided stainless steel. Tubing will stand internal pressure of 2000 psi. Saving in critical materials is commented on. Characteristics of the tubing which are important to its applications are stated. 1 page, 2 photos. ("Modern Plastics," June 1951, page 182)

Maintaining steam quality

Steam quality is discussed as practiced in a large petroleum refinery. Piping diagram shows relation of steam lines, processing equipment, steam purifiers and slug arrestors. 2 pages, 1 photo, 1 diagram. ("Plant Engineering," July 1951, page 68)

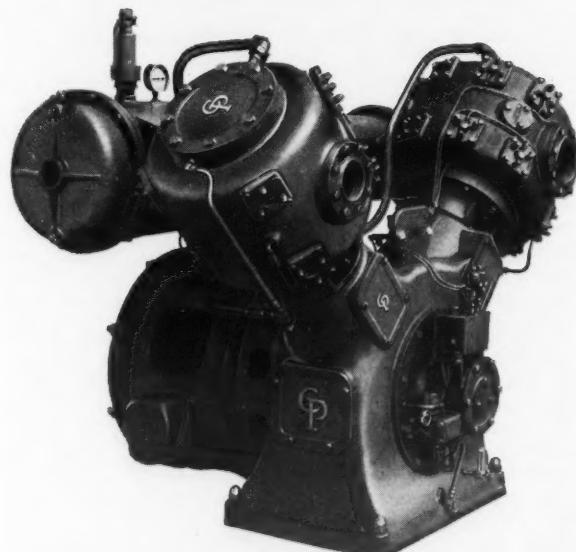
Colorimetric determination of trichloroethylene in vegetable oils

Authors comment on the need for such an analytical method and discuss methods currently in use. Described is a method, with all the necessary techniques and calculations, which has been tested and found accurate in the range from 0.001 to 0.6% trichloroethylene. 2½ pages, 4 figures, 1 table. ("Journal American Oil Chemists Society," July 1951, page 307)



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Where floor space is limited, and continuous, heavy duty service is required, the Type Y Compressor is ideal. Available with direct-connected, flange-mounted synchronous or squirrel cage motor.

The Type Y Compressor is easy and inexpensive to install, requiring only a simple foundation. No aligning or leveling is necessary.

CP features that assure high efficiency and low maintenance include large area Simplate valves, multi-step capacity regulation, effective inter-cooling, precision bearings and force-feed lubrication.

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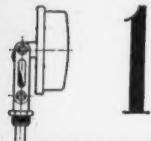
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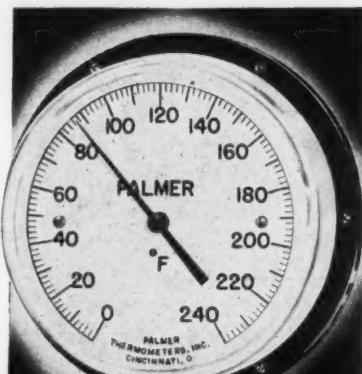
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mercury actuated Dial Thermometers
now in three types to suit any requirements



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Rigid Stem Dial Thermometer
Rigid stem tapered bulb, interchangeable with standard industrial thermometer separable socket.



2



Wall Mounted Dial Thermometer
Wall mounted dial thermometer with flexible connecting arm. Case adjustable to easy reading position.



3

Flush Mounted Dial Thermometer
Flush mounted style for panel mounting with flexible connecting arm.



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For details on the New Palmer Dial Thermometer, please write for Palmer Bulletin 51-129.

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for angularity: Can be adjusted to most readable position at any angle desired.

for readability: Bold Black Numbers . . . 11" of scale Reading Dial face can always be placed in easiest readable position.

for interchangeability: Always specify "PALMER" Separable sockets as they are interchangeable for Dial or Industrial type Thermometers.

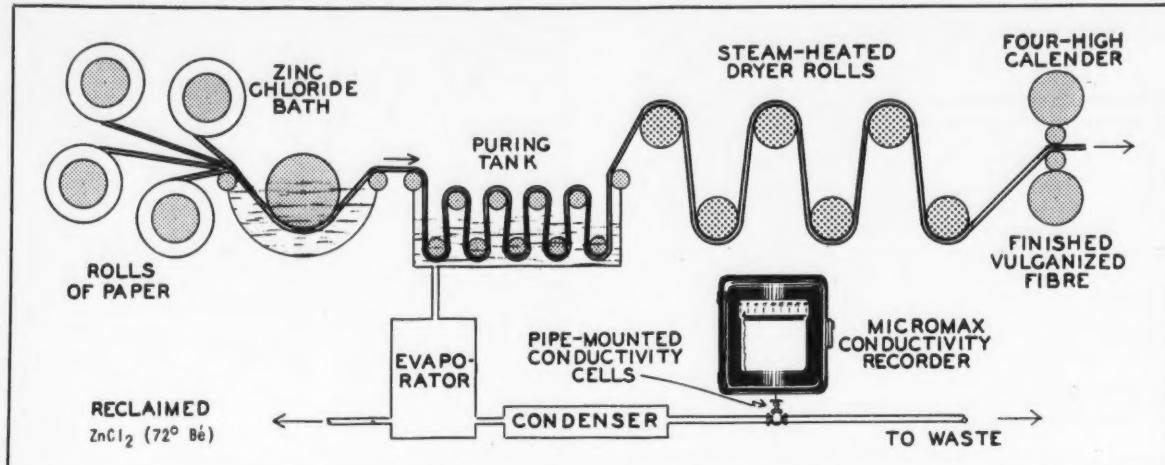
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*Process
Instrumentation*



Continuous process for manufacture of vulcanized fibre uses conductivity recorder to keep continuous record of zinc chloride concentration of waste

Continuous Record of Waste Concentration Conserves Costly Zinc Chloride

Fibre manufacturer saves \$1000
a month by employing recorder
on waste line from evaporator

PROBLEM: Proper operation of a zinc chloride evaporator at the plant of an eastern fibre manufacturer was determined by taking periodic grab samples of waste liquors from evaporator for checking. This method, primarily because it is intermittent and cannot catch fluctuations immediately, permitted high losses of zinc chloride to the sewer.

The process is shown in the diagram. A number of layers of special cotton-rag paper pass simultaneously through a zinc chloride bath which gelatinizes the fibres, causing them to cohere and become one homogenous sheet. After gelatinization, zinc chloride is removed by a puring or washing process which displaces the chemical with water. The sheet of material, now vulcanized fibre, is then dried and calendered to give a hard, dense product.

Dilute zinc chloride solution (about 25° Be') is piped from the puring tank to the evaporator where it is concentrated to about 72° Be' and recovered.

Solution: The diagram reveals how a conductivity recorder has been installed in the waste line leading from the evaporator. Pipe-mounted conductivity cells report concentration to the Micromax recorder which draws a



Operator uses pushbutton station to adjust boiling rate in evaporator according to concentration recorded

continuous record as waste flows to sewer. If concentration becomes too high, the operator reduces evaporation rate; if it gets too low, he increases it.

Results: By watching the recorder, operator can keep chemical loss at a minimum. The instrument lets the man know immediately when waste concentration is wandering

from the optimum point and he can make appropriate adjustment.

This particular company estimates a saving of almost \$1000 per month in chemical cost since starting to use this method of instrumentation.

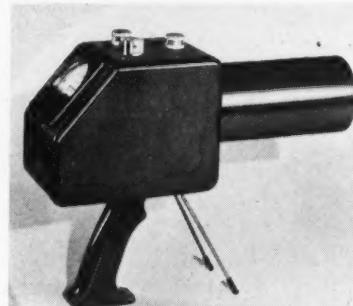
Source: Instruments made by Leeds & Northrup Company, Dept. CP, 4901 Stenton Ave., Philadelphia 44, Pa. . . . or for more information check CP 5996 on handy form, pages 2 and 3.

Time constant of small radiation survey meter is 1.5 seconds . . .

pistol grip eases use in hard-to-reach locations; calibration accuracy is $\pm 10\%$ of full scale

Uses: Measuring beta and gamma radiation in "hot" laboratories handling levels of radioactivity on the order of millicuries. Uses include making spot checks of amount of radiation from each experimental setup where radioisotopes are used, monitoring storage and shipping containers, and measuring roentgen dosage rates from x-rays of energies as low as 50 kv.

Features: Time constant is only 1.5 sec on all ranges. Manufacturer reports extremely stable operation. Small size and gun-shape construction makes instrument especially convenient for getting into inaccessible places.



Radiation survey meter has convenient pistol grip

Canada at Chalk River. Calibration accuracy of instrument is plus or minus 10% of full scale and is maintained throughout the specified battery life of approximately 800 hr.

The portable SU-1E radiation survey meter is provided with three full scale ranges of 15, 150 and 1500 mr/hr. Its controls are positioned on top of case, and meter is mounted on sloping panel to permit high visibility of meter face. Chamber dimensions are about 3" diam by 6" long. Pistol grip is 5" long.

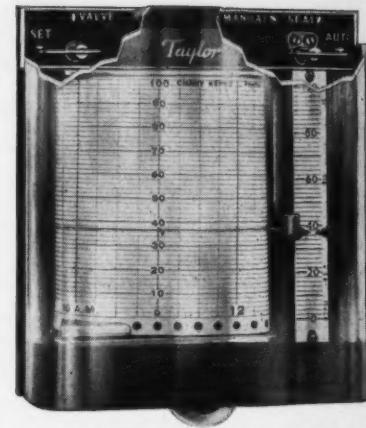
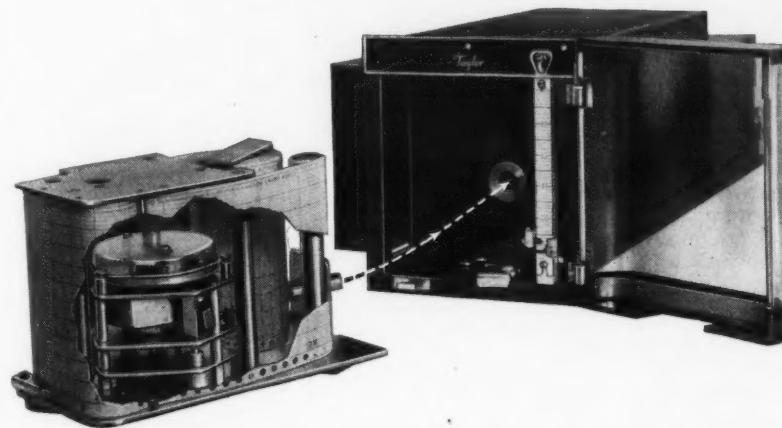
Source: Manufacturer is Tracerlab, Inc., Dept. CP, 130 High St., Boston 10, Mass. . . . or for more information check CP 5997 on handy form, pages 2 and 3.

Mechanical and electronic voltage regulators shown

Twelve-page bulletin presents a wide variety of automatic voltage regulators, both electronic and mechanical. Electronic models for single-phase are available in capacities up to 5 kva. These feature virtually instantaneous response. Electro-mechanical models cover the single-phase line up to 27.5 kva and three-phase circuits drawing up to 100 kva. Text includes operating principles, performance, and description of types. Drawings, photographs and schematics illustrate the material covered. Bulletin S351 is issued by The Superior Electric Co., Dept. CP, Bristol, Conn. When inquiring specify CP 5998 on handy form, pages 2 and 3.

PNEUMATIC CHART DRIVE FOR HAZARDOUS ATMOSPHERES

on Taylor's TRANSET
Recorder*



A 3-hour continuous record is visible on this thirty-day rectilinear strip chart. This TRANSET Recorder fits 4 $\frac{3}{8}$ " x 5" panel space, with automatic-manual unit, remote set point adjustment, valve position indicator—all with unmatched accuracy and dependability.

Another Taylor Hit! The air driven chart drive mechanism for the popular TRANSET RECORDER makes all the advantages of the recorder available to installations in hazardous atmospheres. No electrical connections. The air jet turbine is geared to a self-starting escapement. The pneumatic chart drive is precision-built to give performance that equals or betters spring actuated clock mechanisms.

Accurate, Trouble-free performance is assured because the escapement mechanism is sealed in a rugged, air-tight, rust-proof housing mounted above the air jet out of the air stream.

Low Air Consumption! Only .08 scfm at 20 psi. Operates accurately even though air supply fluctuates within 15 and 35 psi.

Minor timing adjustments can be made externally, and the whole unit may be removed from the chart assembly by removing just three screws.

*Trade-Mark

Self-sealing air connection shuts off air supply automatically when chart drive is removed.

For Complete Details, send for Bulletin 98097-A.

Taylor Instrument Companies, Rochester, N.Y., and Toronto, Canada.

Instruments for indicating, recording and controlling temperature, pressure, humidity, flow and liquid level.



Taylor Instruments
—
MEAN
—
ACCURACY FIRST

IN HOME AND INDUSTRY

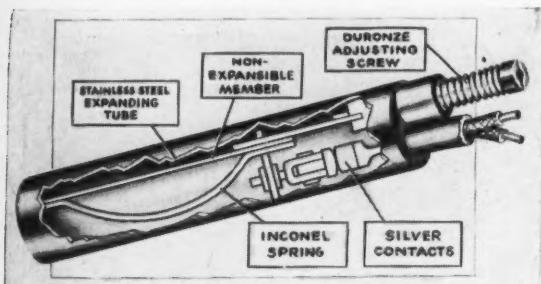
When inquiring check CP 5999 on handy form, pgs. 2-3

Trouble-free service credited to expanding-tube thermostat . . .

simple to set control point for any temperature up to 600 degrees Fahrenheit

Uses: Control of temperatures up to 600°F. Types for conduction, convection, and immersion.

Features: Expanding tube type thermostat is designed for trouble-free operation — stainless steel



Looking inside expanding tube thermostat

tube is utilized as the expanding member, and an Invar strip as the non-expanding member.

An adjusting screw provides simple setting of the control point, and no elaborate heating or cooling procedure is required for stabilization. Pulling or flexing of the leads cannot effect contact position; leads can be any desired length and can be replaced when necessary.

Description: "Scaico" thermostat data: series 12 is $\frac{1}{2}$ " diameter, 2-3/32" long, rated for 600 watt loads at 110/230 v AC or DC, and has sensitivity of 0.2°F on 1 amp load. Series 58 is $\frac{3}{8}$ " diameter, 3" long, rated for 1000 watt loads at 110/230 v AC or DC.

Source: Development of the Smith Control & Instrument Corp., Dept. CP, Palmyra, N. J. . . or for more information check CP 6000 on handy form, pages 2 and 3.

Flowmeters standardized

"Flowmeter Installations, Seal and Condensate Chambers" gives recommended dimensions and arrangements for standardized parts. To obtain, remit 50c direct to Instrument Society of America, Dept. CP, 921 Ridge Ave., Pittsburgh 12, Pa.

.013 oz-in shaft torque actuates precision potentiometer . . .

voltage-dividing resistor finding applications in industrial instrumentation

Uses: Applicable to devices where an exceedingly small mechanical force must be converted into two equivalent voltages. Finding application in industrial instrumentation.

Features: Shaft torque as low as 0.013 oz-in will actuate this precision potentiometer.

Description: A voltage dividing resistor, the device has two separate electrical sections. Current carrying capacities up to 100 ma provide two outputs sufficient to operate recording-controlling or indicating instruments without amplification. The two re-

In Control Valve Bodies*, too —

The C_Q Method Reveals All the Quality Factors

The C_Q Method enables you to select control valves conveniently — with an accurate analysis of comparative value. First, set a standard of quality; then evaluate *all* the quality factors in relation to your standard. The sum of the value of the quality factors is the C_Q (Quality Coefficient).

"It isn't the first cost — it's the upkeep" is true of control valves. The over-all cost — the real cost — includes maintenance and operation delays in addition to the purchase price. Thus, among comparably priced valves the best buy is the one with a high C_Q — because for comparison purposes

$$\text{Real Cost} = \frac{\text{Price}}{C_Q}$$

"A high quality product provides accurate performance over a long period with a minimum of maintenance and operation delays."

In other words, it has a high C_Q. Use the C_Q Method in selecting your control valves.

*This analysis of the valve body assembly is only half the story; write for your copy of an analysis of the diaphragm motor.

Check For These Quality Factors in the Body Assembly

Performance Factor

Flow Characteristics Correct for the Service

Alignment of Parts for Positive Operation and Response

Friction Minimized by Design of Guides, Stuffing Box, Packing, and Plug Stem Finish

Large Body Flow Passage Areas

Long Valve Stroke

C_v (Flow Coefficient) Rating

Mechanical Construction Factor

Strength of Bonnet Construction

Precautions against Seat Ring Distortion

Valve Plug-to-Stem Fastening

Guide Design for Strength and Service Life

Precautions against Misalignment of Parts

Flange Gasket Design

Lubricator Design for Efficiency, Strength, Safety

Stuffing Box Assembly Design

Strength of Bonnet and Blindhead Bolting

Availability of Suitable Body and Trim

Design and Materials for the Service

Ability to Withstand Rough Handling

Convenience Factor

Choice of Body and Trim Materials

Selection of Standard Valve Plug Types

Availability of Standard Reduced Capacity Trim Design

Choice of Standard Packing Materials

Availability of Variety of Bonnet Designs

Standardization of Face-to-Face Dimensions

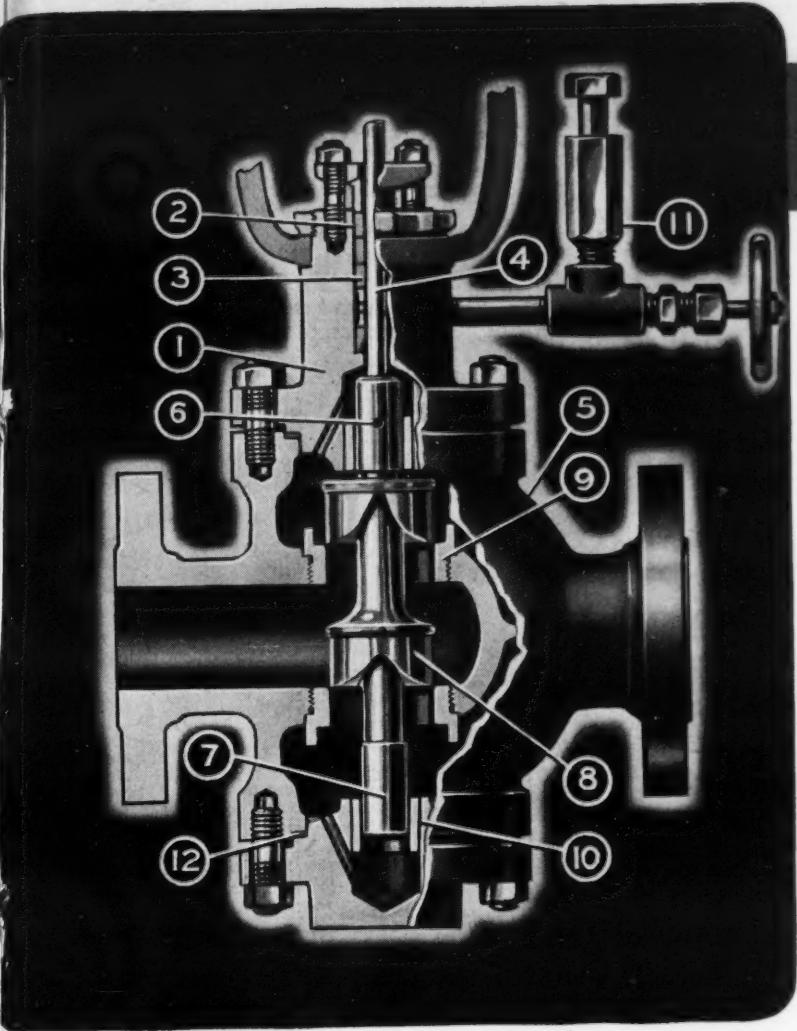
Maintenance Factor

Ease of Detaching Diaphragm Motor

Ease of Accurate Reassembly after Servicing

Interchangeability of Comparable Parts

Ease of Reversing Plug to change Valve Action



THE MASON-NEILAN 10,000 SERIES CONTROL VALVE IS

A High C_Q Product

**MASON-NEILAN
REGULATOR CO.**

1203 Adams Street, Boston 24, Mass., U. S. A.

Sales Offices or Distributors in the Following Cities

New York • Syracuse • Chicago • St. Louis • Tulsa

Philadelphia • Houston • Pittsburgh • Atlanta • Cleveland

Cincinnati • Detroit • San Francisco • Salt Lake City • El Paso

Boise • Albuquerque • Charlotte, N.C. • Los Angeles

Denver • Appleton, Wisconsin • Corpus Christi • New Orleans

Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

YOU CAN INSURE FULL C_v WITH A HIGH C_Q

When inquiring check CP 6001 on handy form, pgs. 2-3

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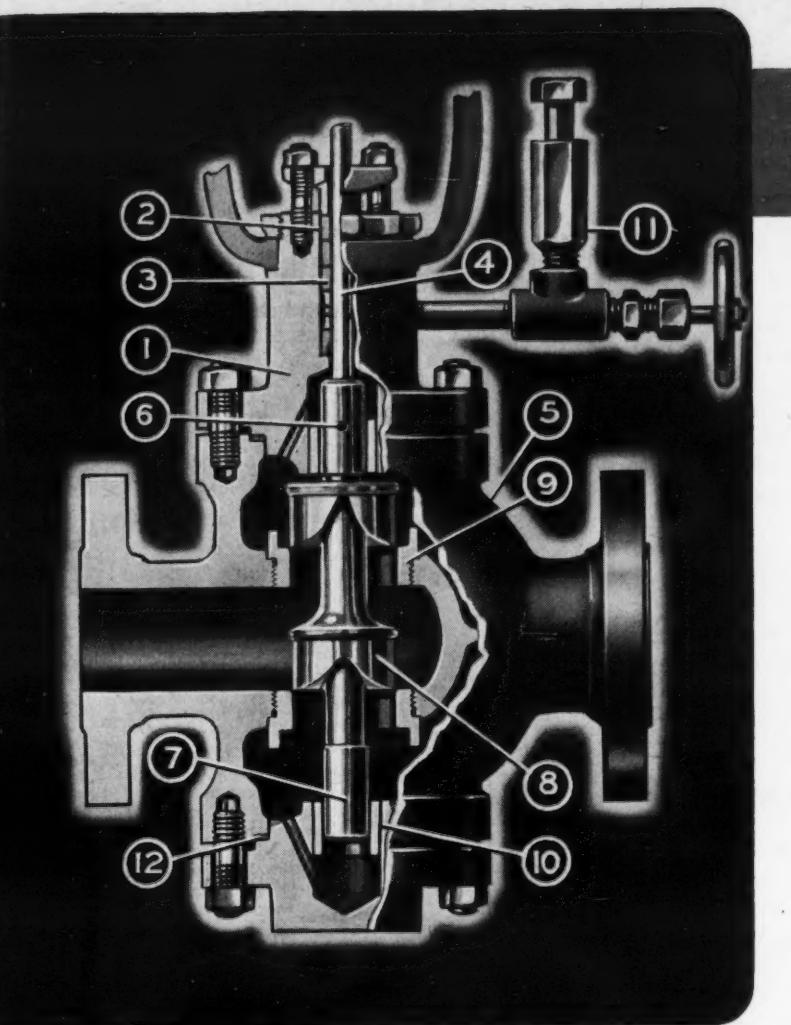
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Check For These Quality Factors in the Body Assembly

- 1. Guide Design for Strength and Service Life
- 2. Precautions against Misalignment of Parts
- 3. (Steel valves) of steel in bonnet and blindhead have minimum clearance, assure
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For Example, Consider the Body Assembly of Mason-Neilan 10,000 Series Control Valves

1. **One-piece Bonnet** of forged or cast steel, with flange piloted in body for strength and accurate alignment. Heavy bolting for strength.
2. **Bolted Stuffing Box** construction on valve sizes 2" and larger. Threaded construction on smaller valves has five-thread minimum engagement, at no compression, for safety. Adequate box depth for sealing at low compression. Manufactured with special tools and gauges to avoid misalignment, and insure reproducibility and interchangeability of parts. Optimum clearances prevent packing flowing, while allowing for expansion over broad temperature range. Fine finish of gland and box surfaces maintains tightness between packing and box wall. Bonnet extension and air-tinned construction available for extreme temperature service; bellows-sealed type for special applications. Bolted construction designed to permit removal of diaphragm motor without disturbing stuffing box.
3. **Four Packing Types** available for application according to service conditions: (1) pre-formed asbestos-and-binder solid ring; (2) braided-jacket, reinforced plastic core, split ring; (3) woven asbestos, Teflon-impregnated, split ring; (4) solid Teflon V-ring.
4. **Honed and Highly Polished Valve Stems** reduce stuffing box friction up to 65%; increase packing life; improve performance.
5. **Body** has large flow passages for minimum pressure drop; bridgewall section designed for heavy seat rings and optimum seat-to-seat distance for rated stroke; has uniform standard face-to-face dimensions in cast iron and steel types.
6. **Stem-to-Plug Fastening** by means of grooved, self-locking pin driven into pin-hole drilled and reamed, in stem and plug simultaneously, while stem is threaded tightly into plug—insures tightness, prevents shearing pin.
7. **Heavy Valve Plug Guide** sections manufactured to very close tolerances—insures strength, accurate alignment, reproducibility, interchangeability.
8. **Choice of Plug Types** for practically all services. Includes Percentage Piston, Percentage Parabolic, Percentage V-Port with wide flow range, percentage characteristics. Also quick-opening and linear types, Point-4-Factor reduced capacity trim in solid and V-Port designs. Single and double seated. Interchangeable trim designs in comparable sizes. All types (except Percentage Piston) reversible in field to change valve action.
9. **Seat Rings** with heavy shoulders which prevent distortion; piloting at maximum ring diameter insures positive centering; narrow seating surface in bridgewall and long threaded section provide tight joint, prevent leakage. Four heavy lugs aid in removal and replacement.
10. **Long Guide Bushings** (steel valves) of hardened stainless steel in bonnet and blindhead have minimum clearance, assure accurate guiding.
11. **Lubricator** size is $\frac{1}{4}$ " minimum for strength; has ball check valve. Forged steel isolating valve supplied with steel valves for added safety.
12. **Fully Retained Gaskets** of corrugated aramid iron or special alloy for tightness and durability.

Accurate Alignment assured by piloted bonnet, blindhead, and seat rings; by precision control of stuffing box, guide bushing, plug guide section clearances; by manufacture with special tools and gauges for exact reproducibility of all parts.

Teflon is a trademark of E. I. du Pont de Nemours & Co.

sistor sections are offered in values between 50 and 60,000 ohms each, and with accuracies up to 0.065%. Operation at frequencies to 425 cps has been successful.

Design is flexible enough to suit most individual needs. Component parts are protected against corrosion. Dimensions are $1\frac{1}{2}$ " long x $1\frac{1}{4}$ " diameter with 0.078" diameter shaft. Total weight is 0.79 oz. Color coded wire leads provide electrical connections.

Source: Development of the Electro-Mec Laboratory, Dept. CP, 225 Broadway, New York 7, N. Y. ... or for more information check CP 6002 on handy form, pages 2 and 3.

How spectrophotometer works

Full-color folder describes theory and operating principles of the spectrophotometer. Produced to familiarize the reader with the operation of such equipment, folder is of educational rather than technical value. Bulletin 48-139 is issued by Coleman Instrument, Inc., Dept. CP, Maywood, Ill. When inquiring specify CP 6003 on handy form, pages 2 and 3.

Fuel to burner cuts off in two to four seconds after flame dies . . .

photo-conductive cell replaces flame rod and photoelectric scanner of former safeguards

Uses: System provides complete flame failure protection and programming control for fully automatic gas, oil, or combination gas-oil burners. Provides for preliminary purge of combustion chamber, ignition on, fuel valve delay, post-ignition timing and post-purge.

Features: Photo-conductive cell in scanner responds to all types of flames. The simple scanner replaces both flame rod and photoelectric scanner of earlier devices. Response to flame failure results in complete fuel cutoff in two to four seconds.

Description: Fireye System FP-2 consists of Programming Control Type 26RJ8 and Firetron Scanner Type 48PT1. Circuits of system bring about instantaneous shutdown of burner upon failure of any component and prevent start-up if any unsafe condition exists. All components are mounted in dust-tight steel housing.

Supply voltage is 115/208/230, 50/60 cycles. Power consumption is 35 VA. System recycles on limit switch operation or power failure. Manual reset is required after flame failure safety lockout. Scanner can operate at ambient temperature of 150°F, programming control at 125°F.

Source: Development of Combustion Control Corporation, Dept. CP, 77 Broadway, Cambridge 42, Mass. ... or for more information check CP 6004 on handy form, pages 2 and 3.

Strain gauge bulletin

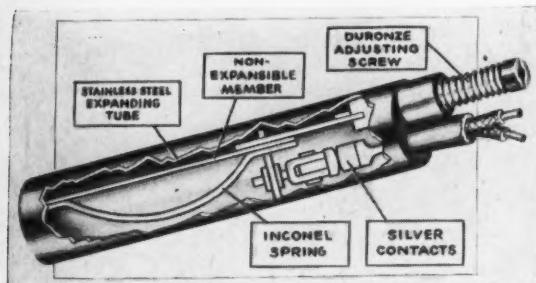
Description and specifications of SR-4 "Post-yield" resistance-wire strain gauge, for strains up to 10%, are given in Bulletin 322. Issued by Baldwin-Lima-Hamilton Corp., Dept. CP, Philadelphia 42, Pa. When inquiring specify CP 6005 on handy form, pages 2 and 3.

Trouble-free service credited to expanding-tube thermostat . . .

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Uses: Control of temperatures up to 600°F. Types for conduction, convection, and immersion.

Features: Expanding tube type thermostat is designed for trouble-free operation — stainless steel



Looking inside expanding tube thermostat

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Performance Factor

Flow Characteristics Correct for the Service

Alignment of Parts for Positive Operation and Response

Friction Minimized by Design of Guides, Stuffing Box, Packing, and Plug Stem Finish

Large Body Flow Passage Areas

Long Valve Stroke

C_y (Flow Coefficient) Rating

Mechanical Construction Factor

Strength of Bonnet Construction

Precautions against Seat Ring Distortion

Valve Plug-to-Stem Fastening

Guide Design for Strength and Service Life

Precautions against Misalignment of Parts

Flange Gasket Design

Lubricator Design for Efficiency, Strength, Safety

Stuffing Box Assembly Design

Strength of Bonnet and Blindhead Bolting

Availability of Suitable Body and Trim Design and Materials for the Service

Ability to Withstand Rough Handling

Convenience Factor

Choice of Body and Trim Materials

Selection of Standard Valve Plug Types

Availability of Standard Reduced Capacity Trim Design

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Maintenance Factor

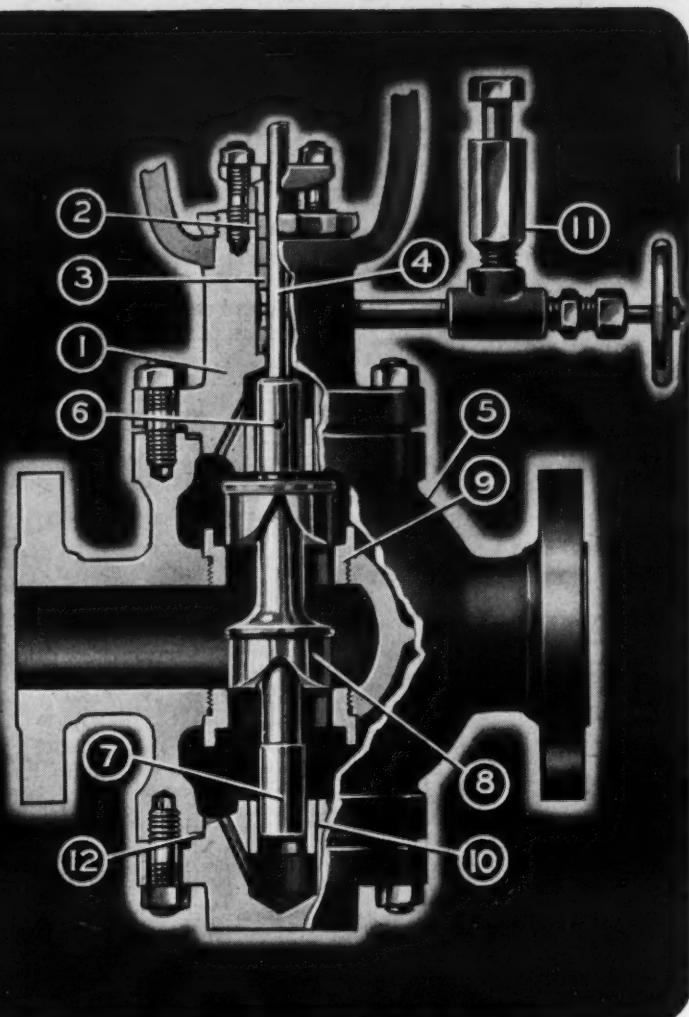
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YOU CAN INSURE FULL C_Q WITH A HIGH C_Q

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PROCESS INSTRUMENTATION

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Source: Development of the Electro-Mec Laboratory, Dept. CP, 225 Broadway, New York 7, N. Y. ... or for more information check CP 6002 on handy form, pages 2 and 3.

How spectrophotometer works

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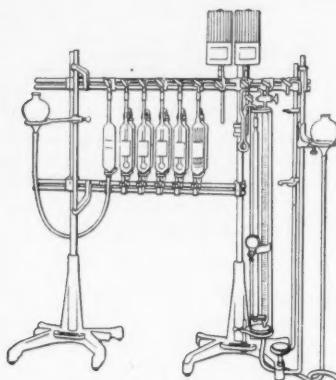
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FOR SCIENTISTS EVERYWHERE

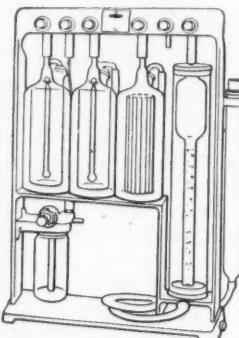
GAS ANALYSIS

APPARATUS

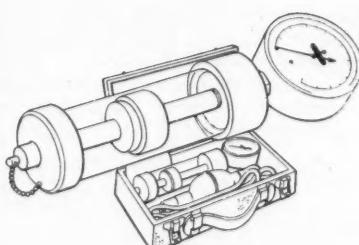
by **BURRELL**



Your needs have impelled Burrell to pioneer in the field of gas analysis down through the years. Many "firsts" and "exclusives" in both construction of apparatus and methods of procedure have resulted. Typical Burrell exclusives are Catalytic Combustion for greater speed, safety and accuracy, and Perma-Therm heating for constant, automatic, temperature control. Of particular interest to scientists everywhere is the versatility of types and models offered. You select from the most complete assortment of gas analysis apparatus available. All of your needs can be met.



THE BURRELL INDUSTRO GAS ANALYZERS are compact, portable and easily operated units for the industrial gas analyst. Designed for on-the-job use, these "Industros" are rugged and trouble-free. The frame is all metal and there are no glass stopcocks to handle with care. Model B (shown), is used for mixtures such as flue gases where determination of carbon dioxide, oxygen, and carbon monoxide is desired. Model C offers added facilities for more complicated mixtures. For detailed information about these efficient Burrell Industro Gas Analyzers, ask for Bulletin No. 313.



THE BURRELL CO₂ INDICATOR is a necessity for all combustion engineers. By measuring the CO₂ content and the temperature of the chimney gas, amount of heat loss can readily be determined. The Burrell CO₂ Indicator is light and sturdy with an easy-to-read scale. No installation or time consuming preparations are needed—a small hole in the stack makes immediate testing possible. A complete kit includes all accessories and instructions for use. Ask for Burrell Bulletin No. 206.

BURRELL

CORPORATION

2223 FIFTH AVENUE, PITTSBURGH 19, PENNSYLVANIA

MANUFACTURERS AND DISTRIBUTORS OF SCIENTIFIC APPARATUS AND LABORATORY CHEMICALS

When inquiring check CP 6006 on handy form, pgs. 2-3

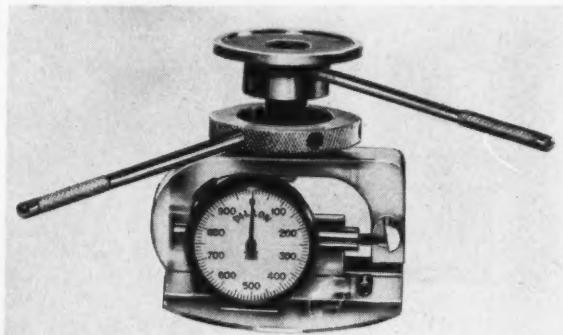
PROCESS INSTRUMENTATION

Extends usefulness of gauge for mechanical pressure . . .

jacking assembly applies compressive load to gauge; one use is for setting spring pressure

Uses: Accessory for manufacturer's mechanical-pressure gauge. The gauge itself has long been used in checking pressures between vise jaws, moving rollers, clutch assemblies, etc. The new accessory extends usefulness and versatility of the gauge.

A typical application where the accessory is valuable is in measuring spring pressure exerted by sealing head in the sealing of beer cans. This pressure must be set exactly in order to create a perfect seal and prevent



Jacking assembly is part at top with handles. When handle at top is pulled toward center of photo, pressure is applied to gauge through side of flexing U-shaped tool steel bar

leakage. Rapid check is made by inserting the gauge with jacking assembly in the relative position normally occupied by can. Load is then applied against sealing head spring by means of the jack. Spring pressure is set to conform to established standards and is read directly on dial of gauge in pounds.

Features: Different sizes and shapes of jacking assemblies are available and can be made up according to detailed drawings.

Description: Jacking assembly consists of a finely threaded screw and large nut with equally spaced holes around the edges. Into these holes, handles are screwed which form a means of applying load to gauge. Parts are all plated and hardened.

Source: Product of W. C. Dillon & Company, Inc., Dept. CP, 1421 S. Circle Ave., Forest Park, Ill. . . or for more information check CP 6007 on handy form, pages 2 and 3.

Measure of refractive index is means for determining rubber hydrocarbon . . .

NBS reveals method usable for large number of separate determinations in short time

A simple, rapid method for the quantitative determination of rubber hydrocarbon in crude natural rubber is announced by the National Bureau of Standards. The method requires only the measurement of the refractive index of a solution containing a known weight of rubber in a known weight of solvent. A single operator, it is reported, can make a large number of separate determinations in a short time.

In studies of the method at NBS, samples were analyzed which ranged from partially purified rubber having a rubber

hydrocarbon content of about 99% to some wild rubbers containing only about 80% rubber hydrocarbon. In general, the precision of the refractive index method has been found to be about the same as that of the rubber bromide method, and somewhat higher than the chromic acid oxidation method. An advantage of the chromic acid method over the others is that it can be applied to either unvulcanized or vulcanized rubber, and also to mixtures of natural and synthetic rubbers. This is not true of either the refractive index or the rubber bromide method, which are applicable to unvulcanized natural rubber alone.

(Summary of Technical Report 1560 issued by National Bureau of Standards, U.S. Commerce Dept., Washington 25, D.C.)

**Choice of inspection heads
suits metal detector to
specific applications . . .**

one can be selected from four for most efficient location of contaminating metal in products

Uses: Indicates the presence of magnetic or non-magnetic metals and alloys contaminating non-metallic products passing an inspection aperture on a belt conveyor or in a chute at rates of travel of 10 to 1000 fpm. Control action that can take place includes lighting a warning lamp, ringing a bell, stopping a continuous process, marking the contaminated object, deflecting the object into reject channels, etc. Helpful in preventing machine damage.

Applicable to such products as plastics, paper, rubber, tobacco, textiles, explosives, and many more.

Features: Four types of small aperture inspection heads are highlights of this equipment. They have been developed to promote more efficient location of contaminating metal, and to meet specialized requirements.

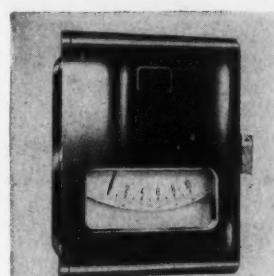
Description: "Guardsman" detectors consist of two units: the control unit which is standard for all models and applications measures 8½" high x 6¾" wide x 10" deep overall and weighs 20 pounds. The inspection head is the second unit which is provided in 4 different styles. Two box-type heads have rectangular apertures — Model MI-33432 measuring 2½ x 7½" and Model MI-33434 measuring 4 x 5" — and are for detecting metal in pharmaceutical products and other items carried on a small conveyor belt during processing. Others have smaller box-shaped heads with round apertures — Model MI-33441 measuring 1-½" diam and Model MI-33442 measuring 2" diam — and are suitable for liquids carried in glass tubes, cigarettes, and similar items that pass through the small head in a non-metallic tube or trough.

Materials passing through the inspection aperture are screened by a high-frequency electromagnetic field generated by coils imbedded in a water-proof material. Reaction caused when metal is present in the material being screened operates a relay which triggers either a signaling device or ejecting mechanism.

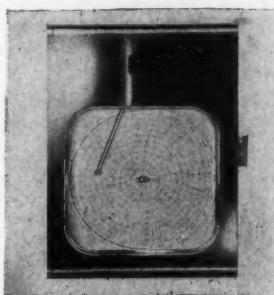
Equipment is reported to be free from vibration and line voltage fluctuations, and is not affected by normal humidity and temperature. All models of the Guardsman require a 115 v, 50/60 cps, 70 w, AC supply.

Source: Designed and built by the Engineering Products Department, RCA Victor Division of the Radio Corporation of America, and marketed by the Eriez Mfg. Co., Dept. CP, Erie, Pa. . . or for more information check CP 6008 on handy form, pages 2 and 3.

HOW TO SIMPLIFY PROBLEMS OF REMOTE MEASUREMENT AND CONTROL



THE TRANSMITTER



THE RECEIVER

Bristol Metameter* Telemetering Instruments Help Step Up Production... Save Time and Money... by Remote Measurement and Control of Pressure, Water Level, Flow, Temperature, Motion, Voltage, Current, Power and Totalized Load.

The Bristol Metameter Telemeter consists of three unit parts: Transmitter, Receiver, and interconnecting line which provides the electrical circuit between the two instruments.

The Transmitter is located close to the point of measurement. Its function is to transmit the readings to the receiver which can be any distance from a few feet to many miles away.

Readings can be transmitted over any two-wire circuit or its equivalent. Private wires, telephone circuits, radio (including microwave), or carrier current channels can be used.

THE TRIED AND PROVED TELEMETERING SYSTEM. Bristol Metameter Telemeter is the product of 37 years of pioneering research and development work. Bristol's continuous program of engineering research and development keeps the Metameter abreast of modern requirements, making it the most reliable and widely used instrument in the field of telemetering.

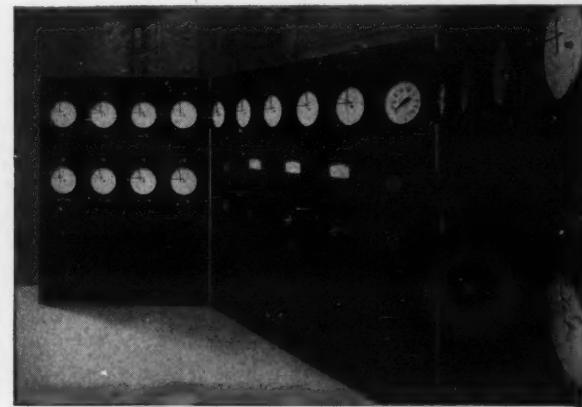
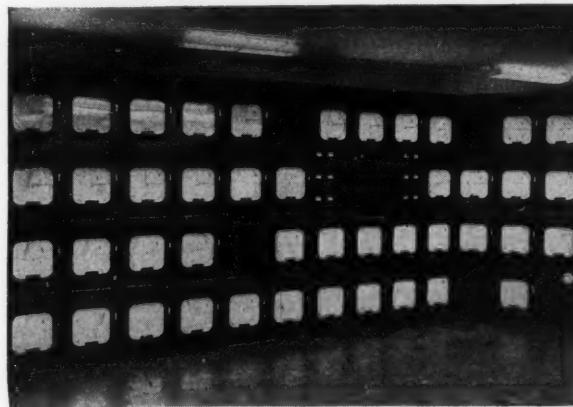
A few of the thousands of Bristol Metameter Telemeter users:

Standard Oil (Indiana), Flintkote, Jones & Laughlin Steel, Bethlehem Steel, Corn Products Refining Company, Champion Paper & Fibre, Mathieson Chemical, New York Central System, McCarthy Chemical,

Weirton Steel, Eastman Kodak, United Piece Dye Works, Freeport Sulphur, U. S. Weather Bureau, Bonneville Power Administration, Woodward Iron, Celanese Corporation, Anaconda Copper.

*Reg. U.S. Pat. Off.

WRITE US FOR BULLETIN M1700. THE BRISTOL COMPANY, 141 BRISTOL ROAD, WATERBURY 20, CONN.



BRISTOL

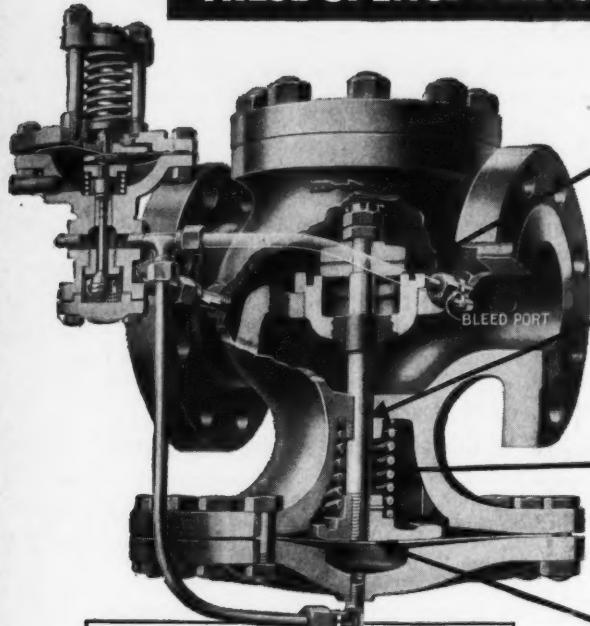
AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

When inquiring check CP 6009 on handy form, pgs. 2-3

HERE'S PROOF

You Can Cut Costs of Pressure and Temperature Control

THESE SPENCE FEATURES SHOW YOU HOW



SPENCE Type ED Pressure Regulator

SECO METAL SEATS AND DISCS — Durable SECO Metal resists wire-drawing. More than twenty years of experience in thousands of installations has failed to produce a single case where SECO Metal has been cut by steam.

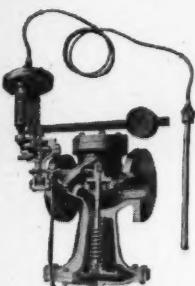
PACKLESS CONSTRUCTION — All Spence main valves and most pilots are built without stuffing boxes. This minimizes friction . . . eliminates much time-consuming maintenance.

SPRING OUT OF PATH OF STEAM — The spring in the Spence Regulator is out of the path of the steam or other fluid flowing through the valve. It operates at low unit stress for exceptionally long life.

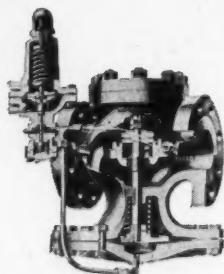
LARGE BALANCED DIAPHRAGM — Spence metal diaphragms, under usual conditions, never require replacement. Spence Regulators have few moving parts and those few are ruggedly constructed and seldom require attention.

YOU BENEFIT by these and many other Spence features that assure accurate, dependable regulation year after year. That means less down-time, less time and money wasted on replacement of parts.

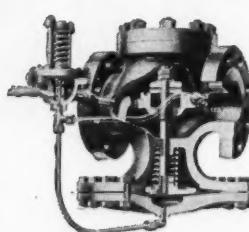
Spence Pressure and Temperature Regulators are built in sizes from $\frac{1}{4}$ " to 12" for service with air, steam, water, oil or gas. Only minor adjustments are needed to switch any Spence Regulator from one service to another.



Type ET150 Temperature Regulator—Tops in performance for both storage and instantaneous heaters.



Type EN Differential Regulator—Accurately controls differential between fluid delivered by regulator and some other source of pressure connected to the pilot spring chamber.



Type EQ Back Pressure Regulator — Completely packless, pilot operated for accurate control of the initial pressure.

SPENCE ENGINEERING COMPANY INC.
WALDEN, NEW YORK

When inquiring check CP 6010 on handy form, pgs. 2-3

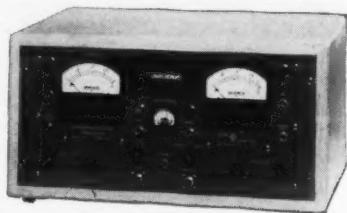
PROCESS INSTRUMENTATION

For low-level beta, gamma counting rates . . .

anticoincidence analyzer used with either solid or gaseous samples

Uses: For low-level beta and gamma counting rates with solid or gaseous samples. For use with Improved Libby Screen-Wall Counter, or with other counter tube types.

Has been used in connection with heavily shielded counting of activities of 10^{15} years of half life, or in counting extremely weak activities with shorter half life such as that coming from natural radioactive carbon. With proper shielding to reduce background it can be used for extremely low-level tracer work. Can be used for low-level tritium studies and is reported to give more sensitive results than mass spectrometer methods.



Anticoincidence analyzer

Features: In an actual laboratory set-up using an unshielded 3" diameter 8" long counter tube, the background count was over 400/min; heavy shielding reduced this to about 130/min. Use of this instrument further reduced the background count to 5/min.

Description: Model 503B Anticoincidence Analyzer consists of 'transmit' and 'reject' amplifier channels feeding and anticoincidence circuit. It is complete with two line and load regulated 500 to 2000-volt high voltage supplies with separate fine and coarse controls. Sensitivity of the transmit channel is such that a pulse having 0.5 volts minimum amplitude at the input will produce the full output pulse of about 90 volts. Sensitivity of the reject channel permits a pulse of 0.25 volts or more at the input to reject any pulse that comes from the transmit channel for 50-100 microseconds after the reject pulse, regardless of the pulse amplitude (0.5 to 100 volts) at the transmit channel input.

Unit is self-contained on a single 17" chassis, 13 $\frac{1}{4}$ " deep and has a standard 8 $\frac{3}{4}$ x 19" front panel. Front panel jacks are provided to permit use of an external 100 microampere meter. A register drive circuit is included. Six-digit manual reset register is capable of registering a minimum of 12 evenly spaced counts each second. Front panel switch offers choice of internal or external totalizer.

Source: Product of the Atomic Instrument Company, Dept. CP, 84 Massachusetts Ave., Cambridge 39, Mass. . . or for more information check CP 6011 on handy form, pages 2 and 3.

These Companies
Have Profited
with SPENCE!

The Springs Cotton Mills
Ford Motor Company
Pennsylvania Power & Light Company
Jones & Laughlin Steel Corporation
National Tube Company
The Atlantic Refining Company
Great Lakes Steel Corporation
Todd Shipyards Corporation
Land O'Lakes Creameries, Inc.
General Electric Company
R. J. Reynolds Tobacco Company
Ohio Edison Company

and thousands of others

Spence

SAMA will register, pool
essential apparatus for
national defense . . .

knowing location and capability of certain apparatus essential in event of atomic, chemical, biological attack. Scientific instruments makers of the nation recently suggested that certain special instruments and apparatus, essential in case of a disaster caused by atomic, chemical, or biological attack, be registered and pooled so that their location can be immediately known to the proper persons. The instruments manufacturers, through their trade associa-

tion, the Scientific Apparatus Makers Association, offered their services and special knowledge in registering and pooling such instruments and apparatus for use by State and local civil defense organizations.

Instruments would be needed to detect atomic radiation and for decontamination, as well as for taking, processing, storing, and administering blood and its derivatives. Large centrifuges, incubators, and certain microscopes are typical of the essential instruments not readily available and which should be registered.

SAMA is suggested as the best equipped and most logical organization for registering such instruments. Its companies make and distribute them; consequently, they know where they are located and of what they are capable. The instrument industry recently requested a listing of all instruments needed by State and local organizations, and specifications for instruments not yet developed, and offered to develop the new instruments.

(Information received from Scientific Apparatus Makers Association, Central Offices, Dept. CP, 20 N. Wacker Dr., Chicago, Ill. Branch offices are located in New York and Washington, D. C., with officers and members located in all parts of the country.)

Improved optics promote greater accuracy in measuring gloss . . .

20 and 45° glossmeters embody lens for projecting rays from receptor window to lightmeter

Uses: Glossmeter line includes a 20° gloss unit (experimental) for measuring the gloss difference of high-gloss enamels and other shiny, flat surfaces, and a 45° gloss unit for evaluating the acid and abrasion resistance of porcelain enamels.

Features: Embodied in these 1951 models is a new optical design that eliminates calibration failures, a new



Shown here is a duplex glossmeter — on right is 20° gloss head for high-gloss studies; on left is 60° gloss head

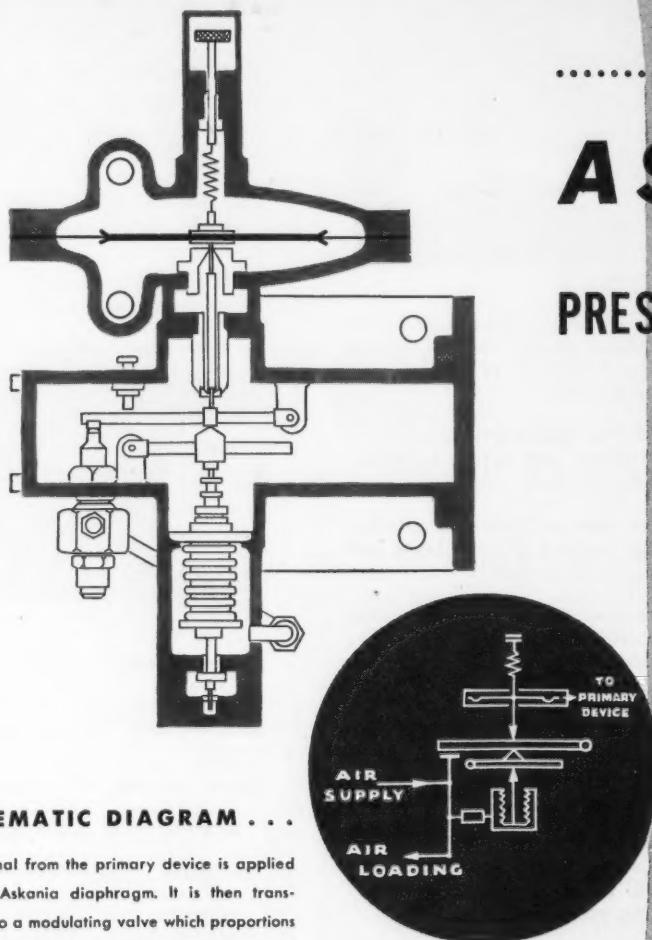
lamp that minimizes burn-outs, and a prefocus socket that permits easy and exact lamp replacement.

Description: Each of the gloss units contains a lamp and lens for projecting a beam of light on the test surface at its specified angle — 20 and 45°. Included also are a rheostat and resistor for controlling lamp intensity, a switch for turning the lamp on, and connecting wires. The receptor window, through which light is taken from the specimen, has a lens behind it to project rays to a sensitive photoelectric lightmeter. This lens contributes accuracy in gloss measurements since it eliminates errors from variations in light distribution at the receptor window.

Source: In addition to these, 60 and 75° gloss heads, as well as 45° reflectance and 85° sheen heads, are products of Henry A. Gardner Laboratory, Dept. CP, 4723 Elm St., Bethesda, Md. . . or for more information check CP 6012 on handy form, pages 2 and 3.

how to solve a sensitive instrumentation problem

...like transforming 0-5" w.c. to 3-15 p.s.i.



SCHEMATIC DIAGRAM . . .

The signal from the primary device is applied to the Askania diaphragm. It is then transmitted to a modulating valve which proportions the loading signal over the standard range of 3 p.s.i. to 15 p.s.i.

See Askania Controls
Booths 106 and 108 . . .
National Instrument Exhibit
Houston, Texas—Sept. 10-14



ASKANIA REGULATOR COMPANY

A SUBSIDIARY OF GENERAL PRECISION EQUIPMENT CORPORATION
242 EAST ONTARIO STREET • CHICAGO 11, ILL.

When inquiring check CP 6013 on handy form, pgs. 2-3



Now, with "Varec's" unique new Field Telephone Link Transmitter, (When used in conjunction with its Electronic Gauger Receiver and Electronic Gauger Transmitter) distance factors are literally unlimited, as are the number of tanks possible to gauge from a single remote point.

At the turn of a dial switch, accurate, REMOTE liquid level gauging in oil refineries, chemical plants, pipe line pump stations and storage terminals is an important reality.

Utilization of existing telephone or power lines minimize installation and wiring costs, in addition to material savings realized in time, labor and accurate gauging with a "Varec" Electronic Gauger installation.

Now it is possible for only one gauger or operator to obtain accurate (within $\frac{1}{8}$ ") continuous gauge readings from any one or a series of tanks simultaneously. The operator needs no special electronic knowledge to maintain or service the "Varec" unit as all parts are of standard plug-in design.

A complete extra service kit is included to assure continuous, dependable operation. WESTON Meter equipped. Low voltage, low current transmission only 0.001 volts D.C. at explosion-proof tank transmitter. Designed to operate from 110-115 volt, 50-60 cycle A.C. or 220 A.C. power at receiver.

There's a "Varec" Electronic REMOTE Liquid Level Gauging unit to meet your requirements. Where close control of blending operations is desired, automatic high and low valve, pump and alarm control is available. Write for our recommendations on your gauging problems today.

FOR ALL TYPES OF TANKS — SINGLE OR MULTIPLE INSTALLATION • 4 TYPES OF "VAREC" EXPLOSION-PROOF TRANSMITTERS TO MEET WORKING PRESSURES UP TO 300 PSIG • ELECTRONIC OR MECHANICAL HI-LO LEVEL ALARM SYSTEMS.

THE VAPOR RECOVERY SYSTEMS COMPANY COMPTON, CALIFORNIA, U. S. A.

Cable Address: VAREC COMPTON USA (All Codes)
New York — Boston — Pittsburgh — Chicago — Detroit
St. Louis — Houston — Tulsa — Casper, Wyo. — Provo,
Utah — Los Angeles — San Francisco — Seattle

P-18

When inquiring check CP 6014 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

**Accuracy of timer
for short intervals
is 2 percent . . .**

electronic device's timing range is 3 to 120 cycles

Uses: For controlled short interval timing; timing range is 3 to 120 cycles. Used for automatic filling operations, conveyor control, control of punch presses and other machine tools, and on manual, air or motor operated welding equipment requiring either beat or non-beat operation. Fulfills specs of NEMA Class 1A non-synchronous timers.

Features: Timing adjustment is calibrated for any interval from 3 to 120 cycles, and accuracy throughout this range is within 2%. Timing adjustment is located on panel inside housing, thus providing tamper-proof setting.

Description: Electronic timer Type 30CR3 may be used with either a



Looking inside short interval timer

115 volt or 230 volt AC supply. Contacts are SPDT, power required is 25 watts.

By simple selection of terminals on the terminal panel, timer will provide beat or non-beat operation (control from momentary or sustained contact switch).

Combinations of the timer are used when it is desired to control other portions of welding cycle, such as the squeeze, heat, cool, on and off periods.

Source: Design of Photoswitch Incorporated, Dept. CP, 77 Broadway, Cambridge 42, Mass. . . or for more information check CP 6015 on handy form, pages 2 and 3.

Lists pyrometers

Bulletin PPY-1 lists several models of pyrometers and accessories. Issued by Wheelco Instruments Co., Dept. CP, 847 W. Harrison St., Chicago 7, Ill. When inquiring specify CP 6016 on handy form, pages 2 and 3.

For quick, accurate

**CHECK
ON PROCESS
GASES**

USE RANAREX

Whenever the specific gravity of a gas is a guide to a chemical reaction or process, Ranarex can be used to indicate, record or control it. Find out now how this accurate, low-cost instrument can help you!

Write to The Permutit Company, Dept. CP 8, 330 West 42nd St., New York 18, N. Y.



RANAREX

PRODUCT OF THE PERMUTIT CO.

When inquiring check CP 6017 on handy form, pgs. 2-3



Quicker, More Accurate TEMPERATURE READINGS!

With Foxboro Dial Thermometers on the "hot spots" of your process, temperature readings are made so easy and accurate that they practically can't be overlooked!

The instrument can be located anywhere up to 100 ft. from the bulb. Airplane-type dials with clear-cut figures give accurate readings 20 ft. away. Sturdy, precision design. All stainless-steel thermal system for lifetime service. Cost no more.

Write for detailed information. The Foxboro Company, 1908 Neponset Ave., Foxboro, Mass., U.S.A. Branches in principal cities.

FOXBORO
Reg. U. S. Pat. Off.

**TEMPERATURE
INDICATORS**

When inquiring check CP 6018 on handy form, pgs. 2-3

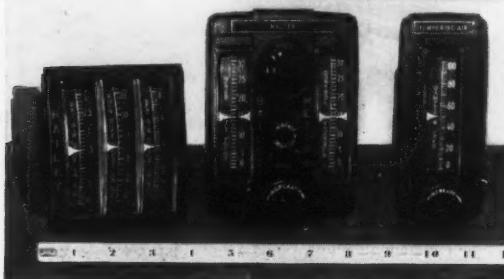
CHEMICAL PROCESSING

Central control panels are 50% smaller when madeup of miniature units . . .

indicator and control units as much as 87% smaller than standard counterparts

Uses: Line of miniature indicators and control units intended for mounting on console type centralized control panels. Suitable for operation of boilers, turbines, and process units.

Features: Space saved by these units is considerable — indicator takes up 87% less room than its standard counterpart, selector valve 52% less space, and remote



Mini-Line equipment includes: (left) Multi-Point Indicator, (center) Selector Valve, (right) Remote Manual Relay

manual relay 70% less. Centralized control panels making use of these units will, in general, be 50% smaller than those of conventional design.

Description: "Mini-Line" instruments include the Multi-Point Indicator, Selector Valve, and Remote Manual Relay.

Indicator is made up of individual vertical scale units nested together in whatever quantities are necessary for comparing a set of related factors. A 3-unit model is merely 4 1/4" wide x 4 3/4" high. Greater space savings can be realized when two factors with common scales are measured; values can be indicated on a single vertical scale unit with separate pointers, thus doubling capacity of each indicator.

Individual scale units may be arranged in any position in the indicator to make their pointers follow a horizontal or diagonal pattern when conditions are normal. Thus, when any factor varies from the desired value, it can be quickly spotted by 'out of line' position of pointers. Blinking annunciator lights can also be incorporated into vertical scale units to flash warnings in case of dangerous conditions.

Selector Valve is intended for either remote manual or automatic operation of air-operated controls. It measures 4 1/2" x 6 1/4" and differs from conventional types in that there is no reset position for transferring between modes of operation. Changes can be made rapidly without disturbing the controlled factor.

Two vertical scale units are mounted in the face plate of the valve to provide easy reading of all switching and adjusting operations. Knobs for remote manual control, set point or bias adjustments, and switching are simplified for operator.

Remote Manual Relay is intended for factors which do not warrant automatic control, but which need only occasional manual adjustment. It measures 2 5/8" x 6 1/4".

Source: Mini-Line instruments are developments of Bailey Meter Company, Dept. CP, 1050 Ivanhoe Rd., Cleveland 10, Ohio . . . or for more information check CP 6019 on handy form, pages 2 and 3.



Safe in hazardous locations!

SARCO self-operated temperature control requires no "explosion-proof" equipment...

Here is a neat and economical solution to the problem of providing accurate temperature control in hazardous areas.

Electric Controls as well as all wiring devices, relays and switches in such locations must be "explosion-proof." They are extremely expensive and not entirely fool-proof.

The engineers of a large metal fabricating plant in the midwest, for an extensive oil storage house, designed the system shown in our diagram.

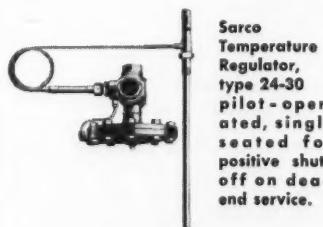
Hot water, generated in a steam heated converter, controlled at the desired temperature by a SARCO regulator, is pumped through heating coils strategically arranged all around the room, and then back to the heater.

Each heating coil is equipped with a SARCO self-operated regulator with liquid-filled, extra sensitive thermostat, to provide modulated control.

Continuous circulation is maintained by equipping the last regulator on the line with a three-way diversion valve, so that a varying portion of the heating medium is by-passed without going through the coils.

RESULT: Safe, extremely sensitive control of room temperature at a fraction of the usual cost.

Catalog 601 contains full information on simple temperature controls for many other applications. Write for your free copy today.



Sarco
Temperature
Regulator,
type 24-30
pilot-operated,
single seated
for positive
shut-off on
dead end
service.

SARCO

COMPANY, INC.

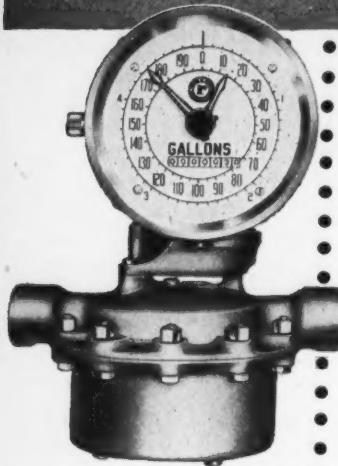
EMPIRE STATE BUILDING, NEW YORK 1, N.Y.

SARCO CANADA LTD., TORONTO 5, ONTARIO

REPRESENTED IN PRINCIPAL CITIES

When inquiring check CP 6020 on handy form, pgs. 2-3

Get Basic Accounting Data ON ALL LIQUID STOCKS, TRANSFERS



with

ROCKWELL INDUSTRIAL METERS

Fast, Accurate
FORMULA AND COST CONTROL

THE METERS
YOU NEED

YOU CAN MEASURE
most any liquid
that can be piped
—oils, chemicals,
paints, liquors,
solutions — over
50 different liquids
in all. Complete list is in bulletin OG-400.

CLIP
COUPON
MAIL
TODAY

ROCKWELL MANUFACTURING COMPANY A 5115

Pittsburgh 8, Pa.

Gentlemen: I am interested in measuring _____

(Name of Liquid)

Pipe Size _____ Working Pressure _____ psi Temperature _____ °F. max.
Max. Flow Rate _____ gpm Min. Flow Rate _____ gpm

YOUR NAME _____
COMPANY _____
STREET _____
CITY _____ ZONE _____ STATE _____

When inquiring check CP 6021 on handy form, pgs. 2-3

PROCESS INSTRUMENTATION

Adjusts ratio of
air to fuel in
gas, oil burners . . .

air adjustable from 50% deficiency to 100% excess

Uses: Ratio controller adjusts the air flow to fuel flow in oil, gas, or dual-fuel fired furnaces.

Features: Wide range of proportional band and reset control



Controls air-fuel ratio

actions makes it easy to adjust the control to the needs of the furnace to which it is attached.

Description: Air-Fuel Ratio Controller is available for operating either a pneumatic or an electric control valve. It is supplied in a single instrument case which fits into standard panel cutouts. Ratio range extends from 50% deficiency to 100% excess air. Direct remote control of air flow, and transfer from manual to automatic control are provided.

Source: Development of the Leeds & Northrup Company, Dept. CP, 4934 Stenton Ave., Philadelphia 34, Pa. . . or for more information check CP 6022 on handy form, pages 2 and 3.

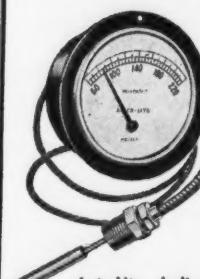
Flowmeters used to locate leaks

Four-page illustrated publication describes equipment used in handling crude oil and refinery products for checking flow rates through large pipelines. Text explains how these flowmeters are used in conjunction with pressure indicating instruments to locate leaks and determine pump efficiency. Operating principle of the equipment as well as equipment itself is shown by photographs and diagrams. Data Sheet 7.2-2 is issued by Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Station 40, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6023 on handy form, pages 2 and 3.

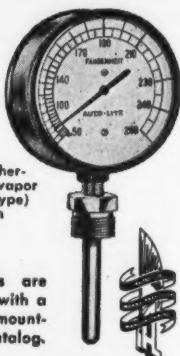
Depend on AUTO-LITE

FOR TEMPERATURE INDICATION

Model G Thermometer (one-to-one ratio, liquid filled type) Priced from \$18.



Model V Thermometer (vapor pressure type) Priced from \$10.25.



Auto-Lite Indicating Thermometers are available in many types and sizes, with a choice of temperature ranges and mountings to meet your needs. Send for catalog.

THE ELECTRIC AUTO-LITE COMPANY
INSTRUMENT AND GAUGE DIVISION • TOLEDO 1, OHIO
NEW YORK CHICAGO SARNIA, ONTARIO

AUTO-LITE
INDICATING & RECORDING THERMOMETERS

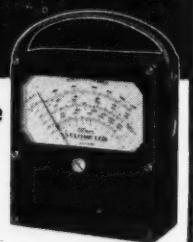
When inquiring check CP 6024 on handy form, pgs. 2-3

Instant and Accurate Reading
of Air Velocities

...with the portable

Alnor

VELOMETER



If you have a problem involving measurement of air velocities, take a tip from production men in almost every industry who depend on rugged, accurate Alnor VeloMeters. This precision-built, self-contained, portable instrument gives instant, accurate readings anywhere—in plants, mines, mills or laboratories. Measures speed of flow through ducts, grilles, furnaces or in the open. Needs no calculations or reference charts—anyone can use it and get accurate readings. Available in a wide range of scales, and with a wide assortment of jets and fittings if needed. You'll want full details and prices, so write for Bulletin 2448-G. Illinois Testing Laboratories, Inc., Room 504, 420 No. LaSalle St., Chicago 10, Illinois.

Alnor

PRECISION INSTRUMENTS
FOR EVERY INDUSTRY

When inquiring check CP 6025 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Manometer coils-up to fit into pocket . . .

U-tube and scale are made of durable vinyl plastic



Coiled, manometer fits easily into pocket

Uses: U-tube manometer for use in the field.

Features: Can be rolled, twisted, or bent into any shape, yet returns to its full length for easy and accurate reading. Fit easily into pocket.

Description: Manometer is made of durable vinyl plastic. Scale is plastic, held between the U-tube, and adjustable.

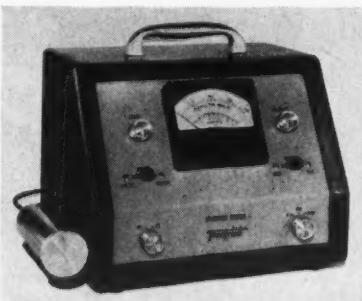
Source: Product of the F. W. Dwyer Mfg. Co., Dept. CP, 317 S. Western Ave., Chicago 12, Ill. . . or for more information check CP 6026 on handy form, pages 2 and 3.

Radioactive contamination doesn't escape detection by lab monitor . . .

used as indicating or aural instrument for counts up to 20,000 per minute

Uses: General-purpose monitor for laboratories handling radioactives. Useful in checking fingertips, bench tops, clothing, glassware for contamination. Contamination from very low beta emitters such as C-14 and S-35, as well as steady laboratory "background" counting rate for detection of large scale fluctuations, can be monitored. Capable of driving recorders with low current drain.

Features: Has three direct-reading, full scale meter ranges of 200, 2000, and 20,000 counts per minute. Includes a built-in loud speaker monitor for use as an aural monitor, also a pulse-generating circuit synchronized with 60 cycle line frequency for a quick calibration check.



Laboratory radiation monitor

Description: The SU-3B laboratory monitor is a compact, AC operated instrument weighing 17 pounds. It is equipped with a mica end-window Geiger tube enclosed in a detachable probe assembly.

Source: Product of Tracerlab Inc., Dept. CP, 130 High St., Boston 10, Mass. . . or for more information check CP 6027 on handy form, pages 2 and 3.

BECKMAN—the leading name in pH—presents another important advancement in instrumentation

Announcing
**the BECKMAN
MODEL N
pH METER**



Completely Portable!
Extremely Compact!
... and Really Rugged!

In the constantly expanding field of pH, there is wide demand for a completely portable battery-operated pH instrument that is low in price, light in weight, compact in size, and amply rugged to be used anywhere—in the orchard, in the oilfields, in textile mills, plating shops, mining and mill operations, food processing plants, laboratories . . . anywhere, without dependence upon outside power circuits.

The newly developed Beckman Model N pH Meter not only meets all these requirements, but also many more. Here are the highlights. Check them over. Never before have unique advantages like these been combined into a single pH instrument!

OPERATING SIMPLICITY AND ACCURACY . . .

- Accuracy to better than 0.05 pH.
- Low operating cost—less than 2c per hour.
- Built-in temperature compensation—0° to 100° C.
- Fast warm-up—less than 10 seconds.
- "Check Pointer" eliminates need for frequent buffer standardization.
- Batteries are easily checked with the regular panel controls—no need to disassemble the instrument. Clip-mounting of batteries eliminates need for soldering or wiring.

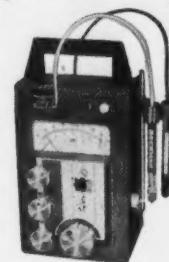
GET ALL THE FACTS on this newest Beckman advancement in pH by contacting your nearest authorized Beckman instrument dealer. Or write direct!

NEW COMPACTNESS AND RUGGEDNESS . . .

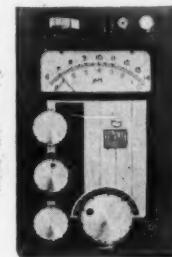
- All-metal case—cast aluminum with baked enamel finish to resist wear and corrosion.
- Splash-proof design—fully desiccated internally.
- Shock-proof—each tube is individually shock-mounted.
- Light weight—less than 8 lbs., complete.
- Small, compact—only 4" x 6" x 9½" overall.
- Equipped with the new Beckman Red Label Glass Electrode—virtually unbreakable, covers almost the entire pH range, usable from freezing to boiling.
- By far the most rugged overall construction of any pH meter.

**NEW CONVENIENCE
SIMPLICITY
RUGGEDNESS**

make the Beckman Model N a noteworthy advancement. The following features are typical . . .



ELECTRODE SUPPORT ROTATES alongside case for maximum convenience in carrying. Instrument can be used in either horizontal position (shown at left) or vertical position (above)—whichever is handier.



CONVENIENT CONTROLS not only centralize all operating functions, but also permit checking amplifier circuits and battery condition without opening case or disturbing battery connections.



RUGGED, COMPACT DESIGN withstands rough field and plant service with negligible maintenance. Solid cast-aluminum case is strong, yet light in weight. Beckman Glass Electrode is virtually unbreakable!

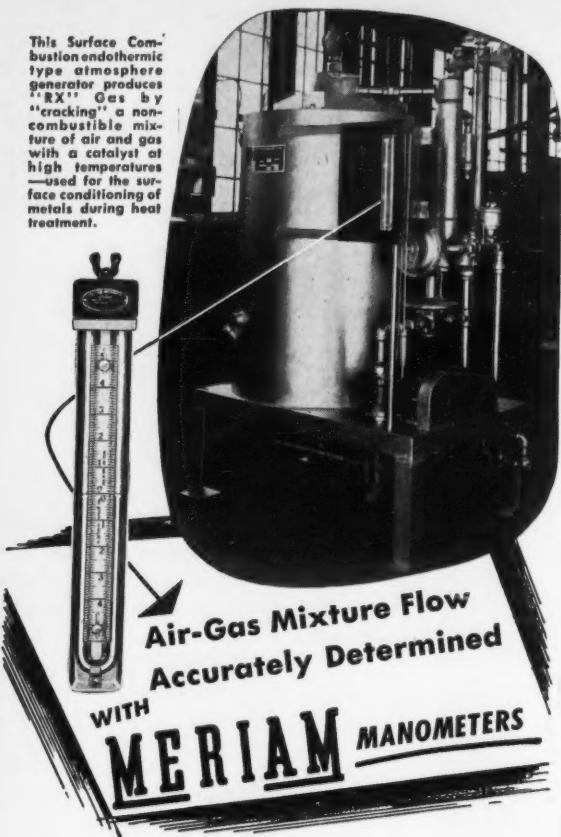
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INSTRUMENTS
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SOUTH PASADENA 11, CALIFORNIA
Factory Service Branches: Chicago — New York — Los Angeles
Beckman Instruments include: pH Meters and Electrodes — Spectrophotometers — Automatic Titrators — Radioactivity Meters — and Special Instruments

When inquiring check CP 6028 on handy form, pgs. 2-3

There are many other important features designed into the Model N. Be sure to get the complete story on this new Beckman development!

This Surface Combustion endothermic type atmosphere generator produces "RX" Gas by "cracking" a non-combustible mixture of air and gas with a catalyst at high temperatures—used for the surface conditioning of metals during heat treatment.



• By measuring the pressure differential across an orifice in the gas-air mixture line, this Meriam Manometer is used to determine the quantity of the proportioned air-gas mixture flowing to the generator reaction tube.

The Manometer is the popular U-Type Clean-Out design. By means of the wing nut at the top, the Manometer body and tube can be disconnected from the head—the tube cleaned and the instrument reassembled—without disconnecting the head section. May we send you Bulletin No. 1 describing this dependable instrument and its application to the measurement of pressures, vacuums and differential pressures in plant and laboratory?

THE MERIAM INSTRUMENT CO.
10940 MADISON AVENUE • CLEVELAND 2, OHIO
WESTERN DIVISION: 4760 E. OLYMPIC BLVD., LOS ANGELES 22, CALIF.
IN CANADA: PEACOCK BROS., LTD., MONTREAL

MERIAM Instruments
ESTABLISHED 1911

MANOMETERS, METERS AND GAUGES FOR THE ACCURATE MEASUREMENT OF PRESSURES, VACUUMS AND FLOWS OF LIQUIDS AND GASES

When inquiring check CP 6029 on handy form, pgs. 2-3

Page 88

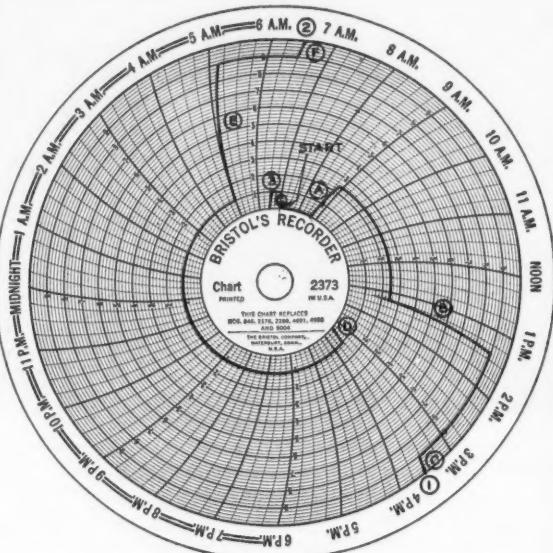
PROCESS INSTRUMENTATION

Accurately charts running time of refrigerators, pumps, motors and conveyors . . .

total running time, down time, and percent time on are easily calculated from pattern on chart

An instrument developed to accurately record on a chart the operating or "on" time of production machinery and similar equipment is being utilized on refrigerators, presses, pumps, motors, conveyors, continuous ovens, furnaces, viners and blanchers. Another important use for it is as an aid to settling disputes between city smoke inspectors and plant management concerning violation of smoke abatement ordinances.

The Running-Time Recorder is a circular chart instrument equipped with two synchronous motors. One motor rotates the chart so that elapsed time is recorded



Typical 8" size chart record from a smoke violation recorder. Smoke violations (smoke density above legal limit) occurred at 8:45 A.M., 1:15 P.M., 3:30 P.M., 5:00 A.M., and 6:30 A.M., as shown by pen movement toward the outside of the chart. Each traverse of the chart represents a time period of 10 minutes; duration of any violation can be easily read to an accuracy of 0.1 minute. Thus the violation at "A" lasted for 2.4 minutes. Total violation time for the day, determined by counting the number of traverses, is 21 minutes. Note that during periods when no violation is taking place, pen makes a record concentric to the center circle

on a scale while the other motor drives the pen arm across the chart to record duration of running time on another scale (see chart record illustrated).

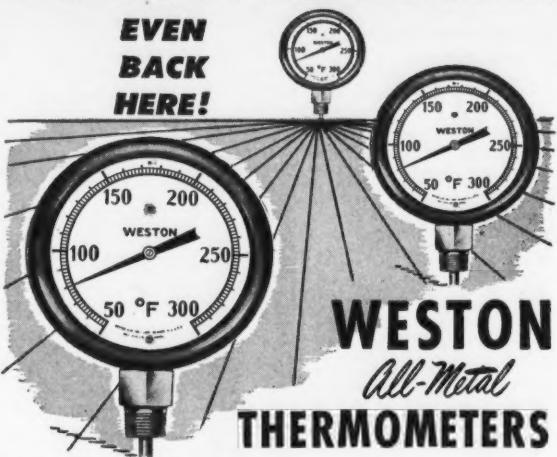
After the pen reaches the end of the scale it drops back to zero and is again driven across the chart whenever equipment is operating. When the machine under study is stopped, the recorder pen draws a record of "off" time on the elapsed time scale.

Motor driving the pen arm can be actuated by a switch at the machine, by a motor circuit in the machine, or by any other device that will close a circuit, such as photo cells and thermostats.

Chart selected will depend upon user's requirements. If necessary, a chart can be used that will enable easy determination of total operating time of a machine to within a few seconds. Because of the self-totalizing

READABLE...INSTANTLY...

EVEN
BACK
HERE!



WESTON
All-Metal
THERMOMETERS

Seconds count when things go wrong . . . wherever temperatures are critical. And not even a split-second is lost in reading temperatures accurately, when the thermometers are WESTON. Their large, boldly marked faces are readable, even from a distance. And the rugged, all-metal construction of WESTON bi-metal thermometers assures dependable, trouble-free operation. Available in types, sizes and stem lengths for most industrial applications. Write for bulletin T-13. Weston Electrical Instrument Corporation, 585 Frelinghuysen Avenue, Newark 5, N. J. . . manufacturers of Weston and Tagliabue Instruments.

WESTON Instruments

When inquiring check CP 6030 on handy form, pgs. 2-3



"LIQUIDS WORTH STORING
ARE WORTH MEASURING"
WITH A
LIQUIDOMETER
Tank Gauge
WRITE FOR COMPLETE DETAILS

THE LIQUIDOMETER CORP.
38-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

When inquiring check CP 6031 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESS INSTRUMENTATION

nature of the record, total time of operation can be quickly determined without tedious adding of small increments of time.

Source: The Bristol Company, Dept. CP, Waterbury 91, Conn. . . or for more information check CP 6032 on handy form, pages 2 and 3.

Speeds of numerous machines monitored by single indicator . . .

selector switch is the secret; unusually wide choice of scales and speeds possible

Uses: Tachometer is available with over 50 different full-scale range markings for measuring any speeds between 1/10 to 100,000 rpm. Direct reading for such units as rpm, fpm, in/sec, etc.

Features: Selector switch on the front panel of the instrument makes it possible to monitor the speeds of a number of different machines. This is an especially valuable feature when a comparison of speeds of two machines is needed.

Description: Tachometer indicator can be located up to 1000' from the tachometer heads on machines, and ordinary electrical wiring used for connecting the elements. Various heads offered by manufacturer can be selected for measuring speeds in specific units. No speed changing drives are required. Indicator is mounted in sponge rubber. Over-speeding does not damage it. Can be easily calibrated in the field.

Tachometer can monitor speeds of numerous machines

Source: Development of the Metron Instrument Company, Dept. CP, 432 Lincoln St., Denver 9, Colo. . . or for more information check CP 6033 on handy form, pages 2 and 3.

Describes draft gauges and low pressure instruments

Two-color, 20-page bulletin discusses seven types of indicators as well as recorders, and controllers used in low pressure instrumentation. Two-page application table aids in selection of the proper instrument for a given installation. Calibrating springs, diaphragm units, differential valve assemblies, and other parts are explained. All details of the instrument such as size, scale ranges, cases, etc., are given in each case. Fourteen types of draft and pressure, differential and other measuring elements are pictured. Bulletin 51-667 is issued by The Hays Corporation, Dept. CP, Michigan City, Ind. When inquiring specify CP 6034 on handy form, pages 2 and 3.



When inquiring check CP 6035 on handy form, pgs. 2-3

THE POWERS REGULATOR CO.

Established 1891 • Offices in Over 50 Cities • See Your Phone Book

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"KARBATE" IMPERVIOUS GRAPHITE BRAND HEAT EXCHANGERS FOR ALL PURPOSES!

The "Karbate" impervious graphite heat exchangers illustrated are used extensively as boilers, coolers, condensers, vaporizers, evaporators, heaters and absorbers in handling corrosive chemicals, either hot or cold. They *all* can be had in a complete size range. *All of them* offer the following advantages:

- **Highest heat conductivity rate of the practical corrosion-resistant materials.**
- **Highly resistant to corrosion by acids or alkalis, hot or cold.**
- **Freedom from corrosion scale, as compared to metals.**
- **Immune to thermal shock.**
- **No contamination of product.**
- **Strong and easy to install and maintain.**



Shell-and-Tube: Series 70A—Two sizes, 16.4 sq. ft., and 24.6 sq. ft. of outside surface area respectively. Tubes easily replaced in the field. Interchangeable single and double-pass construction.



Series 240A—70.6 feet of outside heat transfer surface. Easy tube replacement. Easily converted on job to single, double, or four-pass tube side flow by simple change of fixed covers. Steel, shell, oversize shell connections, impingement plates and drain and vent plugs integral with shell end castings. Stainless-steel baffles assembled with steel tie rods to form protective cage for tube bundle. Removable "Karbate" tube bundle. Write for catalog sections for S-6690, S-6715 for details of applications, maintenance, sizes and characteristics of these exchangers.

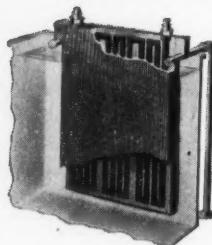
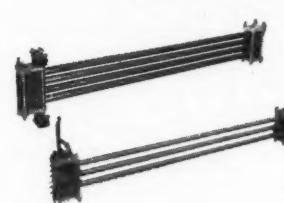


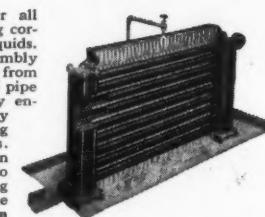
Plate heaters: Used to heat or cool corrosive liquids in tanks and vessels. Compact, completely assembled, easy to put in. Used in pickling, etching, plating and cleaning tanks. Complete size range. Models for horizontal and vertical mounting. Write for catalog section S-6620.



Style FH heat exchangers (Size 1 1/2): Are especially recommended for tanks with solution depths of 16 inches or less. Write for catalog section S-6750.



Cascade coolers: For all cooling jobs involving corrosive gases and liquids. Complete cooler assembly may be made quickly from 4 standard items in 5 pipe sizes. Capacity easily enlarged or reduced by adding or subtracting standard sections. Compact construction to save plant room. No special supporting structure needed. Write for catalog section S-6780.



Concentric tube exchangers: Available in two types. Series 10A is small, low-priced, gives true counterflow. Exceptionally good for small flow rates at narrow temperature differences. Series 20A manufactured with "Karbate" inner and outer piping, and is used to transfer heat between two corrosive fluids. Both have sectional construction, can be added to or subtracted from at will. Sturdy, can be moved from place to place after assembly, adapted to any method of mounting on floor, wall, or ceiling. Write for catalog section S-6670.

The term "Karbate" is a registered trade mark of Union Carbide and Carbon Corporation

NATIONAL CARBON COMPANY
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street, New York 17, N. Y.

District Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco

In Canada: National Carbon Limited
Montreal, Toronto, Winnipeg

A full line of "Karbate" impervious graphite pipe and fittings

for conveying corrosive chemicals includes: "Karbate" pumps of advanced design embodying impervious graphite case, impeller, and a rotary seal which eliminates the stuffing box. Pump prices reduced up to 33%. Write for catalog section S-7000 for pipe information, S-7200 for pump information.

When inquiring check CP 6036 on handy form, pgs. 2-3

new

Basic reactions of syntheses in 517-page volume

Sixth volume of series covers ten more basic reactions involved in organic synthesis. Each chapter is written by experts on the reaction. Chapter contains general discussion of method, modifications, examples of application, special precautions, expected yield, detailed description of procedure, and other pertinent details. Particularly important are lists in each chapter giving compounds successfully handled with the method and compounds that do not yield the expected product. References are given copiously.

Typical topics of this 517-page, 6 x 9 1/4" book include the Stobbe condensation, Pictet-Spengler synthesis, Oppenauer oxidation, synthesis of phosphonic and phosphinic acids, and preparation of thiazoles. To obtain "Organic Reactions," Vol. VI, remit \$8.00 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. When inquiring specify CP 6037 on handy form, pages 2 and 3.

Reports on fabricating methods for silicone rubber

Twenty-page publication outlines six methods used in fabricating silicone rubber stocks. Product is reported to show very little aging effect in chemical or physical properties. Tests show that it will withstand 500°F intermittently or 300°F continuously. Many material saving procedures are given as well as typical data on curing and shipping. "Silastic Facts 9b" is issued by Dow Corning Corp., Dept. CP, Midland, Mich. When inquiring specify CP 6038 on handy form, pages 2 and 3.

Catalog discusses alarms for combustion systems

Seven alarm systems for flame failure are outlined and discussed in 32-page catalog. Manufacturer makes specific recommendations for various types of oil- and gas-fired boilers. Auxiliary equipment is shown and specifications given. Catalog 9601 is issued by Minneapolis-Honeywell Regulator Co., Industrial Div., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6039 on handy form, pages 2 and 3.

Cartoons put safety message across to worker

Twenty-eight cartoons illustrate the salient points of safe operation of a fork truck. Printed in two colors, 24-page booklet puts safety message in graphic, pointed style. "Safety Saves" is issued by Clark Equipment Co., Industrial Truck Div., Dept. CP, Battle Creek, Mich. When inquiring specify CP 6040 on handy form, pages 2 and 3.

Russian chemical journal cross-indexed in English

"Journal of General Chemistry of the USSR" (Vol. 19, 1949) has been extensively cross-indexed in the English translation. Cross-index is divided into four sections: 1) titles of papers, listed in order of appearance in the journal; 2) author index, alphabetically; 3) subject index, alphabetically; and 4) index to organic compounds, accord-

Literature

ing to empirical formula. Section 1 refers to the pages of the original Russian publication, other sections refer to the English translation.

Available to non-subscribers for \$2.50 from Consultants Bureau, Dept. CP, 152 W. 42nd St., New York 18, N. Y. When inquiring specify CP 6041 on handy form, pages 2 and 3.

Packing used at 350° F, higher with cooling

Dense, relatively inert packing is reported to give positive seal on high pressure lines while exerting much less pressure on glands. It can be used on many liquids at 350° F, and at higher temperatures if cooled. Ordinarily graphited, the material is also available in white, ungraphited form. Four-page bulletin is issued by Packing Div., Raybestos-Manhattan, Inc., Dept. CP, Manheim, Pa. When inquiring specify CP 6042 on handy form, pages 2 and 3.

Aqueous pH, varnish, oil tests using comparator described

Set of three catalogs describe equipment for pH determination with indicators, and testing of varnish and oil color.

Twelve-page Catalog 600-10 describes several sets of glass standards for pH and water testing. Also included are standards for colorimetric analysis and auxiliary equipment. Catalog 605-50 gives information on viewers and standards used in determining oil color. Varnish standards are given in Catalog 605-40. Non-fading glass specimens are made up to ASTM specifications and are accepted by American Paint and Varnish Manufacturers Assn.

Catalogs are issued by Hellige Inc., Dept. CP, 3718 Northern Blvd., Long Island City 1, N. Y. When inquiring specify CP 6043 on handy form, pages 2 and 3.

Plastics specifications tabulated for quick reference

Table correlates seven codes employed by government which make reference to 57 booklets, specifications sheets, and technical directives. All grades and forms of laminated plastic are entered in table which shows comparable code designation and grade. Plastics specifications table is issued by Synthane Corp., Dept. CP, Oaks, Pa. When inquiring specify CP 6044 on handy form, pages 2 and 3.

Preforming speeds, improves molded plastic parts

Plunger-molded plastics processing can be speeded and improved, manufacturer reports, by using plastic pills rather than powder for the operation. Pill is approximate bulk of finished object and is formed into briquette for convenience in loading multiple presses. With single cavity molds, better finished distribution is reported.

Three-color, 18-page catalog presents data on die clearance, hardness of plastic and other pertinent subjects. Series of photographs and specification tables depict models of preforming presses available. Catalog 509 is issued by F. J. Stokes Machine Co., Dept. CP, 5900 Tabor Rd., Philadelphia 20, Pa. When inquiring specify CP 6045 on handy form, pages 2 and 3.



• Under present conditions we cannot always give you all the materials you require. But we can give you plenty of help through Revere's Technical Advisory Service. And, our colleagues in American business tell us it's a worthwhile aid, too. We have been rendering this service for many years, and it is backed by a wealth of knowledge accumulated over a century and a half of working with metals.

So, with your problems on the increase, as those aren't these days, why not check us on what's bothering you and see if we can't help. We are already helping others regarding the usage, to their best advantage, of the products they can get.

Since two or more heads can produce more right answers than one, let's get together. You can get in touch with the Revere Technical Advisory Service through the Revere office nearest you.

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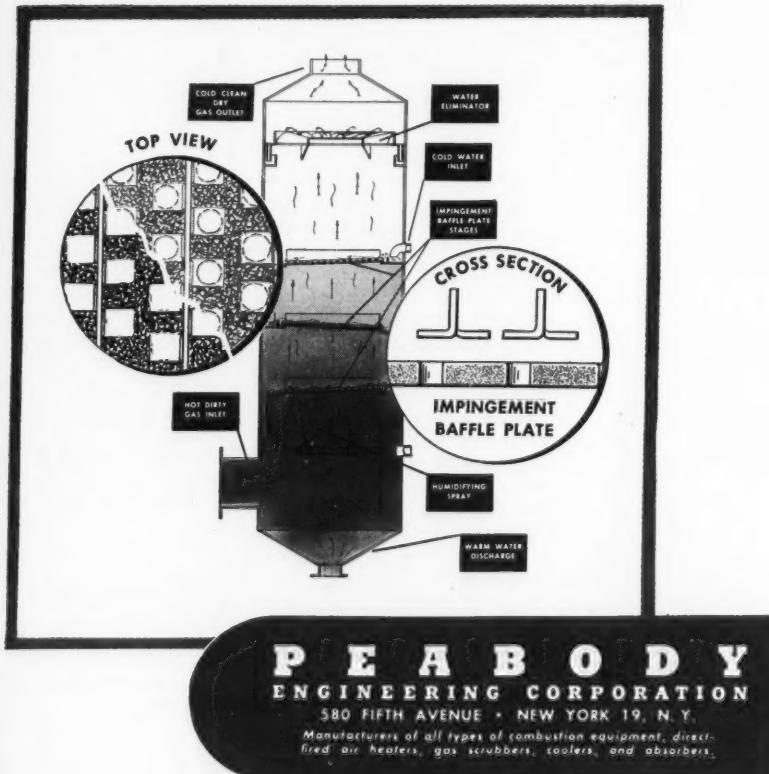
When inquiring check CP 6046 on handy form, pgs. 2-3

A better product

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Peabody Scrubbers, Coolers and Absorbers offer industry an unusually effective means of controlling gas cleanliness, temperature and absorption of gas components. This control, in many processes, results in not only a *better product* but a *better profit* as well, because it eliminates many troubles at subsequent points in your process. If you have a problem of processing or product control affected by gas condition, write, wire or call your nearest Peabody representative for complete details on how Peabody products can help you. No obligation.



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NEW LITERATURE

Shows lab furnaces

Four-page, illustrated bulletin shows combustion tube furnaces from 600 to 7500 w for laboratory use. Bulletin LAB-1236-A is issued by Hevi Duty Electric Company, Dept. CP, Milwaukee 1, Wis. When inquiring specify CP 6048 on handy form, pages 2 and 3.

Dehumidification outlined

Four-page folder, "A Few Facts About Dehumidification for Industry," includes table of recommended humidities for various industries. Issued by Abbeon Supply Co., Dept. CP, 179-15 Jamaica Ave., Jamaica, N. Y. When inquiring specify CP 6049 on handy form, pages 2 and 3.

Shows forms fabricated from sheet, plate

Two-color, 24-page catalog is profusely illustrated with forms fabricated from sheet and plate metal. Alloys as well as standard metals are handled. Catalog W-745 deals with housings, panelboards, tanks, etc. Two 2-color, 4-page bulletins cover alloys (Bulletin C-150), and fabricated metal machine bases, guards, and pans (Bulletin 150-BB). Issued by Littleford Bros., Inc., Dept. CP, 457 E. Pearl St., Cincinnati 2, Ohio. When inquiring specify CP 6050 on handy form, pages 2 and 3.

Tests torque, in or out, up to 650 hp

Two-color, four-page publication illustrates and describes dynamometers for horsepower ratings up to 650. Units with speeds up to 6000 rpm are available for testing input or output torque of motors, engines, fans, bearings, etc. Specifications and characteristic curves are given together with information about typical uses. Publication GEA-5552 is issued by General Electric, Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 6051 on handy form, pages 2 & 3.

Floor repair outlined

Pocket-size, 32-page booklet analyses floor maintenance, telling where to look for and how to correct bad floor conditions. Material covers wood and concrete floors. "Over the Rough Spots" is issued by the Stonhard Company, Dept. CP, 525 Stonhard Bldg., 1306 Spring Garden St., Philadelphia 23, Pa. When inquiring specify CP 6052 on handy form, pages 2 and 3.

How to save Labor and Money by Centralizing Lubrication

FOR more than 20 years, Farval has been saving manpower and money for users. Through efficient, dependable lubrication of machines and industrial equipment of all kinds, Farval saves 4 ways: It saves oiling labor, it saves lubricant, it reduces bearing expense, it eliminates down time.

The Farval System is a positive mechanical method of delivering oil or grease under pressure to a group of bearings from one Central Station, in exact quantities, as often as desired. It consists of a central pumping unit, two main supply lines and a measuring valve for each bearing.

Bulletin 25 gives you the facts and figures to apply to your own lubrication problems. The Farval Corporation, 3257 East 80th St., Cleveland 4, Ohio.

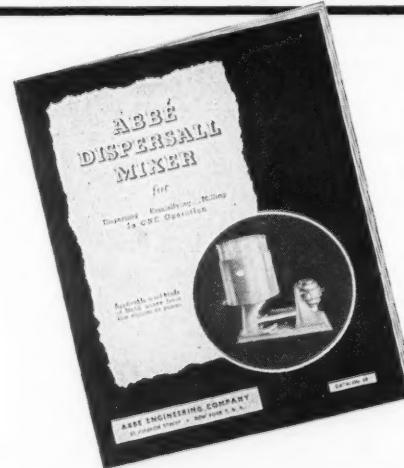


**Write for FREE
Bulletin 25**



When inquiring check CP 6053 on handy form, pgs. 2-3

If You Need Faster... Better Mixing, Blending, Dispersing or Emulsifying



Get this new Catalog 68. It tells the complete story of a field-proven piece of equipment that is setting performance records on all kinds of thin to heavy slurries... and pastes.

ABBE ENGINEERING CO. 46 CHURCH STREET
NEW YORK 7, N.Y.

Makers of
ABBE ENGINEERING Ball, Pebble and Jar Mills

When inquiring check CP 6054 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Conditions, characteristics covered in fire pamphlet

Sixty-four-page illustrated pamphlet deals with characteristics of fires and the conditions that breed them. It also touches forecasting, fighting, and prevention. Statistics covering fatalities, property damage, and cause of fires in the US and Canada since 1900 are listed. Exhaustive studies of wartime fires and lessons learned in these are given. To obtain "Conflagrations in America Since 1900", remit \$1.00 direct to National Fire Protection Assn, Dept. CP, 60 Batterymarch St., Boston 10, Mass. When inquiring specify CP 6055 on handy form, pages 2 and 3.

Style is important factor in women's safety hat

Light-weight women's safety hat is designed by fashion expert to be attractive. "Ray-Ve" folder is issued by Boyer-Campbell Co., Dept. CP, 6540 St. Antoine St., Detroit 2, Mich. When inquiring specify CP 6056 on handy form, pages 2 and 3.

Directory lists biological labs

Paper-bound, 164-page directory lists, locates and identifies more than 1000 biological laboratories in the US and Canada. To obtain fifth edition of "Directory of Biological Laboratories" remit \$3.00 direct to Burns Compiling and Research Organization, Dept. CP, 200 Railway Exchange Bldg., Chicago 4, Ill. When inquiring specify CP 6057 on handy form, pages 2 and 3.

No lubrication needed in impregnated bearings

Wooden bearings, impregnated with non-oxidizing lubricant, are reported to be perpetually self-lubricating and unaffected by water or abrasives. One-page publication explains, using diagrams and photographs of an installation, how these bearings can be used in gravity conveyors. Special types are available for cases where moisture is encountered. Technical Notes 200 is issued by Arguto Oil-less Bearing Company, Dept. CP, 149 Berkley St., Philadelphia 44. When inquiring specify CP 6058 on handy form, pages 2 and 3.

Synthetic resin paint explained

Eight-page brochure presenting characteristics, properties, uses and methods of application of synthetic rubber resin based coatings is issued by Casey and Case Coatings Co., Dept. CP, P. O. Box 151, Maywood, Calif. When inquiring specify CP 6059 on handy form, pages 2 and 3.

Easily applied resistant tape stops corrosion on pipe

Properties and illustrations of tape as used on pipe are given in 4-page bulletin. Tests show that protective tape can be applied 3 times as fast as conventional protective pipe coatings. Good electrical properties are combined with the chemical inertness of polyvinyl chloride to simultaneously remedy the ground current and chemical aspects of corrosion. "Stop Corrosion With Tape" is issued by Minnesota Mining & Mfg. Co., Dept. CP, St. Paul 6, Minn. When inquiring specify CP 6060 on handy form, pages 2 and 3.

DISASTER... and Thermal Electric

WESTERN UNION

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Just picture this: As flood waters began to rise, Thermal Electric users did not have to maintain steam in the face of impossible difficulties to prevent freeze-up of their wax, asphalt or other fluid lines. They did not have to remember to drain them, with a thousand other simultaneous problems demanding their attention.

Afterward, they did not have to disassemble or re-erect their fluid transport. They just hooked another Thermal Electric Transforming Energizer to the pipe, and production proceeded while Fluid Systems Engineers dried out the flood-soaked unit for re-installation.

Where a Thermal Electric Standard System is part of the oil burning layout, steam becomes available immediately for drying out the premises and for essential services. Thermal Electric melts the bunker fuel in the pipes and in storage. If old fashioned steam systems had been used, waterlogged remote pump-sets could not have maintained constant circulation and no steam could have been available for days to heat the fuel. Thermal Electric

provides immediate operation as soon as the flood recedes.

Thermal Electric's flexible equipment design permits us to furnish disaster replacements immediately from stock.

Thermal Electric has helped in many disasters. Thermal Electric was used in restoring service to Southern New England Telephone Company, New England Telephone and Telegraph Company, United Illuminating Company, and many companies along the Atlantic Seaboard after two devastating hurricanes.

In the Kansas-Missouri flood area, Thermal Electric speeded the return of service for—

Owens-Corning Fiberglas Corp.

915' of 375°F. asphalt transfer

American Can Company

140' of 425°F. asphalt transfer

Blanke-Baer Extract and Preserving Company**Eden Seminary****Marillac Seminary****Stephens College****Enterprise Cleaning Company****Sears-Roebuck and Company**

Fluid System's engineers are a service team. No cost or effort is spared to maintain continuous and dependable performance. Direct contact with home office personnel insures service without delay at all times.

Thermal Electric
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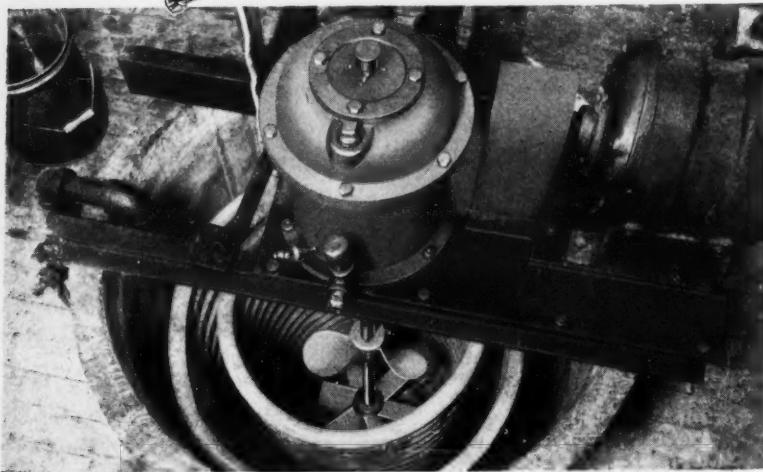


When inquiring check CP 6061 on handy form, pgs. 2-3



ON THE GO WITH NETTCO

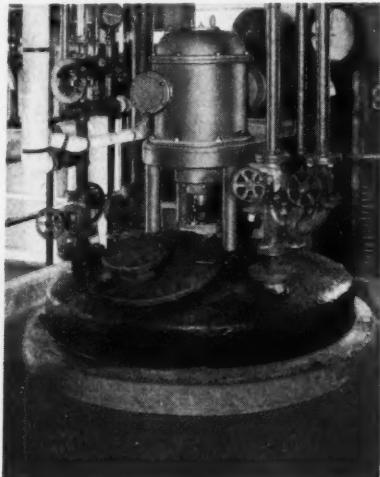
It's another case from the Nettco files — another of the hundreds and hundreds of plants using Nettco Engineered Agitators to speed production and keep costs in line. This manufacturer of dyestuffs and chemicals employs standardized Nettco equipment to accomplish specialized processing results. Here again, Nettco Agitators contribute important economies by saving valuable processing time and by eliminating down-time and maintenance costs.



Netco WT-17 Drive with lead covered shaft, turbine, and propeller. Used in sulfonating oils in conjunction with heat transfer equipment.



Netco WT-27 Drive on sulfonating tank. Note the compact installation leaving maximum free tank-top area.



Netco WT-27 Drive on special reactor for production of dyes. Heavy-duty bearings of the Drive take unusually severe operating loads in stride.

Netco will be glad to recommend agitating equipment for your regular or specialized processing requirements. Write today to NEW ENGLAND TANK & TOWER COMPANY, 93 Tileston St., Everett 49, Mass.

NETTCO Engineered AGITATORS

When inquiring check CP 6062 on handy form, pgs. 2-3

NEW LITERATURE

Oven temps to 750° F do not hurt lubricant

Four-page bulletin describes series of lubricants used at temperatures from 200 to 750°F. Highest temperatures are handled with molybdenum sulfide preparations. Bulletin 85 is issued by Bel-Ray Company, Inc., Dept. CP, Green Village Road, Madison, N. J. When inquiring specify CP 6063 on handy form, pages 2 and 3.

How to protect vital papers

Six-page, three-color brochure describes filing cabinets, safes, and other paper storage units which are not only fire-proof but reported to protect stored papers from heat, rough handling, or deliberate tampering. "How Safe Are Your Drawings?" is issued by Remington Rand Inc., Dept. CP, 315 Fourth Ave., New York 10, N. Y. When inquiring specify CP 6064 on handy form, pages 2 and 3.

Tells of spectrometer for X-ray work

Folder describes recording X-ray spectrometer with wide range Geiger-counter goniometer. Data Sheet 10.16-1 is issued by Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Station 40, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6065 on handy form, pages 2 and 3.

Multiple V-belt drive standards set

Sixteen-page manual lists "Engineering Standards for Multiple V-belt Drives". To obtain two copies, remit \$1.00 direct to Multiple V-belt Drive & Mechanical Power Transmission Association, Dept. CP, 7 W. Madison St., Chicago 2, Ill. When inquiring specify CP 6066 on handy form, pages 2 and 3.

'Hot-and-cold' tubes specified

One-page specifications sheet deals with three models of Belmont Hilsch Vortex Tubes. These are the tubes which split a stream of gas, under the proper conditions, into two streams at different temperatures. Used as cooling devices, they handle many jobs too small to make ordinary refrigeration practical.

Temperature control is attained by throttling and is maximum when the division results in approximately 70%



Here's an AMAZING BRAND NEW SAFETY SIGN that will be welcomed by Safety Men! Brady Safety Signs stick to wood, glass, metal, concrete, etc. without moistening. May be applied to any clean surface in a jiffy. No screws, nails, bolts or skilled help necessary. All you do is peel from card, apply where wanted and the sign is up to stay.

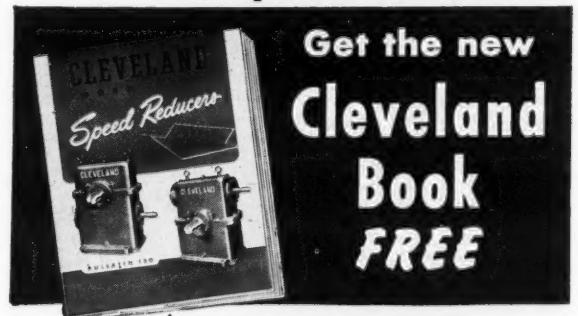
Brady Safety Signs are made of durable cotton cloth, Silicone Coated to resist dirt, grime and moisture. CONFORM TO ASA Standard Z35.1-41. Select your requirements from a complete catalog of standard safety messages. Cost only a few cents per sign. Immediate delivery. Specials made to order.

WRITE FOR
Free
SAMPLES
AND
USEFUL
CATALOG



When inquiring check CP 6067 on handy form, pgs. 2-3

Calling all users of Speed Reducers!



Get the new
Cleveland
Book
FREE

Bulletin 130 gives rating tables, dimensions and other data you need in selecting the right sizes in standard worm-gear speed reducers. Ask for your copy.

New bulletins on other types of Cleveland worm gear drives and worm-gear sets also available. Outline your needs. The Cleveland Worm & Gear Co., 3257 E. 80th St., Cleveland 4, Ohio.



CLEVELAND
Worm Gear
Speed Reducers

When inquiring check CP 6068 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**No More Frozen or Galled STUDS
(even at 1800 F!) Try this Amazing
Money Saver.**

**FREE Test Sample
of the NEW FEL-PRO**

**CUT costly stud breakage,
heater dismantling time,
pitting of metal surfaces!**

We'd like to send you a free sample of the new Fel-Pro C-5 "Hi-Temp" Thread Compound to try on your toughest thread compound problems, including alloy and stainless steels. Then you can see the amazing, money-saving results being obtained by the nation's largest refineries, utilities and process industries. Fel-Pro's exclusive Colloidal-Copper formula keeps metal parts separated, regardless of temperatures. Its neutral action solves the alloy and stainless steel pitting problems. One utility company reports that heater dismantling time has been cut from two days to four hours, by the use of Fel-Pro C-5 "Hi-Temp". Why not see what "Hi-Temp" can do for you... get your free sample and complete data sheet—write today!

FELT PRODUCTS MFG. CO.

1515 Carroll Avenue, Chicago 7, Illinois

When inquiring check CP 6069 on handy form, pgs. 2-3



NEW LITERATURE

hot and 30% cool air. At 150 psi, one of the tubes listed is capable of reducing inlet temperature by more than 80°F. Form V-2-551 is issued by Thermo Instruments Co., Dept. CP, Belmont, Calif. When inquiring specify CP 6071 on handy form, pages 2 and 3.

Wide diversity switches classified

More than 5000 types of micro switches are represented, with illustrations of typical switches in each class, in four-page, two-color bulletin. It catalogs, describes, and specifies switches in the following nine sections: heavy duty limit, medium duty limit, explosion-proof, high-capacity enclosed, die cast enclosed, basic, V3 switches, and actuators. Bulletin 54 is issued by Micro Switch, Dept. CP, Freeport, Ill. When inquiring specify CP 6072 on handy form, pages 2 and 3.

Pocket-sized chart guides lubrication

Lubrication chart for eight of manufacturer's industrial truck models folds to handy pocket-size. Chart tells when parts should be lubricated and recommends oil types. Form 1102 is issued by Hyster Company, Dept. CP, 2902 N. E. Clackamas St., Portland 8, Oregon. When inquiring specify CP 6073 on handy form, pages 2 and 3.

Cold storage equipment pictured, outlined

Two two-color, single sheet bulletins picture and describe refrigeration equipment used in fresh carcass chilling, beer cellar cooling, and similar heavy loads. Bulletins 118 and 119 are issued by the Niagara Blower Company, Dept. CP, 405 Lexington Ave., New York 17, N. Y. When inquiring specify CP 6074 on handy form, pages 2 and 3.

Discusses napthenates as driers

Ten-page booklet discusses napthenate driers and compares them to other drier types. Physical data are given regarding paint formulations. In addition, Federal and ASTM specifications are shown. "Oronite Napthenate Driers" is issued by Naftone, Inc., Dept. CP, 515 Madison Ave., New York 22, N. Y. When inquiring specify CP 6075 on handy form, pages 2 and 3.



Agilene (POLYETHYLENE)
CONTAINERS FOR STORAGE AND TRANS-
PORTATION OF CORROSIVE CHEMICALS

AGILENE containers are the answer to your problem of handling, storing, and transporting of corrosive materials. Their light weight, resistance to impact and chemical inertness make them ideal for chemical industries.

Write today for full information.

MADE IN SIZES
FROM ONE QUART
TO FIVE GALLON
CAPACITY
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WRITE FOR
QUANTITY PRICES
TODAY!



AMERICAN AGILE CORPORATION

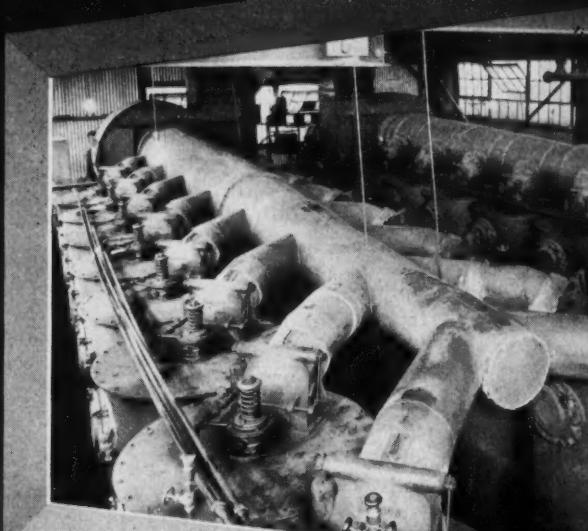
PLASTIC DIVISION

5806 HOUGH AVE. • CLEVELAND 3, OHIO

When inquiring check CP 6070 on handy form, pgs. 2-3

AUGUST, 1951

DRACCO PORTRAIT



OF PROCESSING PROFITS

DRACCO AUTOMATIC FILTERS will prove your most profitable answer to fume or dust control and recovery under heavy-duty manufacture. For years, in many smelting, food processing and chemical plants they have provided top-efficiency operation under heavy dust burden or fume conditions where standard filters would prove unsatisfactory. Their continuous full-automatic operation results in additional economies in labor and materials.

Backed by over thirty-five years experience devoted exclusively to dust and fume control, DRACCO equipment is engineered and precision-built to fit your requirements exactly.

DRACCO Dust Control Engineers will gladly discuss your problem and demonstrate the advantages DRACCO can provide for your specific installation. Simply call or write DRACCO CORPORATION, 4063 E. 116th Street, Cleveland 5, Ohio, 415 Lexington Avenue, New York 17, N. Y.

DRACCO

DUST CONTROL EQUIPMENT
PNEUMATIC CONVEYORS • METAL FABRICATION

When inquiring check CP 6076 on handy form, pgs. 2-3

Move

**PAINTS
INKS
VARNISHES
THINNERS
SOLVENTS**

**QUICKLY
SAFELY
EASILY**

● A well-known varnish plant depends on this bank of Roper 3600 Series pumps to keep production humming. It is a typical example of Ropers on the job, for there are many similar installations. Some pump liquids even thicker than varnish; others pump liquids as thin as gasoline. The Roper 3600 Series is available in various combinations of pump sizes, gear reduction ratios, and motor sizes to provide unusual adaptability to innumerable pumping needs in petroleum, processing, and general industries. Capacities of 40, 50, 70, 90, and 100 g.p.m. at 60 lbs. p.s.i. are available.

FEATURES THAT ASSURE DEPENDABILITY

Long service life is provided by hardened steel reduction gears running in oil on anti-friction bearings... a flexible coupling connects gear reduction and motor to eliminate thrust or radial loads... pumping gears operate in axial hydraulic balance... steel shafts run in high-lead bronze bearings... split packing gland in an extra-deep packing box facilitates servicing. You'll want all the facts on compact, quiet-running Ropers so send the coupon today!

ROPER
Rotary Pumps

GEO. D. ROPER CORPORATION
748 Blockhawk Park Avenue, Rockford, Illinois

Please Send Catalog 950
 Have a Roper Representative Call

NAME _____

ADDRESS _____

CITY _____

COMPANY _____

When inquiring check CP 6077 on handy form, pgs. 2-3

NEW LITERATURE

Aluminum paint sheet

One-page bulletin 025 on aluminum paint is issued by Prufcoat Laboratories, Inc., Dept. CP, 63 Main St., Cambridge, Mass. When inquiring specify CP 6078 on handy form, pages 2 & 3.

Practical bulletin covers hydrogen peroxide

Thirty-six-page bulletin covers shipping, handling and storage, uses (giving specific details), test methods, and data. Bulletin is written in non-technical language for personnel actually handling the material in the plant. Background and descriptive matter is given.

"Hydrogen Peroxide" is issued by Industrial Chemicals Dept., Pennsalt Chemicals, Dept. CP, 1000 Widener Bldg., Philadelphia 7, Pa. When inquiring specify CP 6079 on handy form, pages 2 and 3.

Details thermometers

Eight-page bulletin describes and specifies wide range of thermometers. "Auto-Lite Thermometers" is issued by Instrument and Gauge Div., The Electric Auto-Lite Company, Dept. CP, Toledo 1, Ohio. When inquiring specify CP 6080 on handy form, pages 2 and 3.

Presents magnetic O₂ recorder

Three-color, 16-page bulletin presents an oxygen recorder which uses the para-magnetic property of oxygen as its sensing method. Publication is illustrated with drawings, graphs, and halftones. Table at the beginning of the bulletin shows the five main functions of the instrument, giving examples. Topics covered include: introduction, analyzing section, recording section, gas sampling systems, and results. Bulletin 51-829 is issued by The Hays Corporation, Dept. CP, Michigan City, Ind. When inquiring specify CP 6081 on handy form, pages 2 and 3.

Gas data listed

Physical constants, available quantities, analysis for principal impurities, and other pertinent information is listed for 29 gases. Form 2086-B is issued by Ohio Chemical & Surgical Equipment Co., Dept. CP, 1400 E. Washington Ave., Madison 10, Wis. When inquiring specify CP 6082 on handy form, pages 2 and 3.

MERCOID



FOR INDUSTRIAL APPLICATIONS
REQUIRING POSITIVE CONTROL
OF PRESSURE, TEMPERATURE,
LIQUID LEVEL ETC.

CONTROLS PERFORM IMPORTANT
RESPONSIBILITIES, AND SHOULD BE
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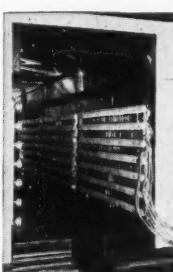
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MENTION THIS PUBLICATION

THE MERCOID CORPORATION
4201 BELMONT AVE. CHICAGO 41, ILL.

When inquiring check CP 6083 on handy form, pgs. 2-3

Electric Heat With a Guarantee!

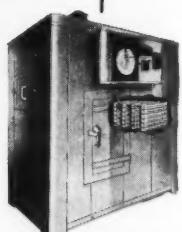
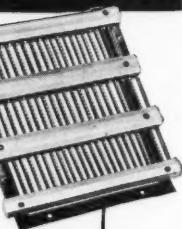
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"Folded-and-Formed"
Heating Elements covering
entire work area in
straight convection oven.



Custom-built insulated
plug with "F-and-F"
Heating Elements attached,
in air circulating
oven.



Standard "Folded-and-
Formed" racks in batch
type air circulating
oven.

Standard racks—1.5 to 7.5 K. W.—made in
12" x 12" sections are used vertically or
horizontally, singly or in multiples, to pro-
vide any desired total K. W.

Custom-built racks available in
wide variety of sizes, up to 600
K. W. in one bank.

Special racks, up to 10' high by
10' long, with any required
K. W. per square foot of sur-
face area.

TRENT INC.
Electrically Heated Industrial Equipment
235 LEVERINGTON AVE. PHILA 27 PA.

When inquiring check CP 6084 on handy form, pgs. 2-3

Technical reports indexed

Bibliography of Technical Reports (Vol. 14, July-Dec., 1950) has been indexed by subject. This monthly publication lists additions to the 150,000-document OTS collection of foreign and domestic reports. To obtain Subject Index to Volume 14, remit \$1.00 direct to The Office of Technical Services, US Dept. of Commerce, Washington 25, DC.

Cam valves cover range from 1 to 1740 gph

Four-page, two-color publication shows valves using a cam and slot-orifice combination to control rate of flow. Rotation of cam progressively blocks off delivery slot. Dial face shows cam setting. Valves are designed particularly for controlling rate of flow of oil to burners. Capacity ranges from 1 to 1740 gph. Dimensions, specifications, and illustrations are included. Catalog 704A is issued by Hauck Manufacturing Company, Dept. CP, 124-136 Tenth St., Brooklyn 15, N. Y. When inquiring specify CP 6085 on handy form, pages 2 and 3.

Uses, materials shown in diaphragm brochures

Two illustrated brochures report on diaphragms for use in instrument and control work, and on fabric materials for diaphragms, respectively. Issued by Vulcan Rubber Products, Inc., Dept. CP, Brooklyn 20, N. Y. When inquiring specify CP 6086 on handy form, pages 2 and 3.

Bulletin features synthetic fibers used in filter cloths

Six-page, two-color bulletin features actual samples of nylon, orlon, and dynel fabrics used in all types of pressure and vacuum filters, centrifuges, and dry filtration equipment. Also included is a selection chart showing which materials are best for a list of typical corrosive chemicals and solvents. Several instances of savings effected by using synthetic material are cited.

Service life of three to thirty times that of conventional fabrics is due to high strength, resistance to practically all acids, alkalis, salts and solvents, and complete immunity to bacterial action. Nylon and orlon types can be used continuously at temperatures of 300°F. Bulletin 16 is issued by Filtration Fabrics Div., Filtration Engineers, Inc., Dept. CP, 155 Oraton St., Newark 4, N. J. When inquiring specify CP 6087 on handy form, pages 2 and 3.

Illustrates 50 lab items for water, sewage tests

Twenty-one-page catalog, "Modern Equipment for the Water & Sewage Laboratory," illustrates 50 pieces of equipment and describes many more. Issued by E. Machlett & Son, Dept. CP, 220 E. 23rd St., New York 10, N. Y. When inquiring specify CP 6088 on handy form, pages 2 and 3.

Optical bulletin features inspection equipment

Eight-page bulletin illustrates magnifiers, lights and microscopes used in inspection. "Better Equipment for Inspection" is issued by Arthur S. LaPine & Company, Dept. CP, 121 W. Hubbard St., Chicago 10, Ill. When inquiring specify CP 6089 on handy form, pages 2 and 3.

To help you lengthen equipment life and save critical materials

Some important facts about GALVANIC CORROSION and how you can control it

With strict conservation of basic defense materials again the order of the day, this brief discussion of bi-metallic corrosion may save you a few unnecessary headaches

When two dissimilar metals are coupled in a corrosive liquid — brine, for example — one metal is often attacked by corrosion at a faster rate than usual.

The second metal may remain free from attack. Or it may be corroded at a slower rate than usual.

This type of corrosion is known as "galvanic corrosion."

What to look for

Before blaming galvanic action for corrosion in your equipment, you should first determine whether these three conditions exist:

1. Are the metals different?
2. Are they surrounded by an electrolyte?
3. Are they in electrical contact through a metallic path?

A "yes" answer to all three questions should send you to the "Galvanic Series" chart reproduced at the right. Here the metals are listed in the reverse order of their "nobility" or resistance to galvanic corrosion.

Galvanic corrosion usually results in a higher rate of corrosion of the "less noble" metal, and protection of the "more noble" metal.

How to use the chart

Notice how the metals are grouped. Any metal in one group can safely be used with any other metal in its own group. When you start mixing metals from different groups, however, you may run into serious galvanic corrosion of the metal higher on the list. And the further apart the metals stand, the worse this corrosion may be.

Another thing to consider in using different metals, too, is the electrical

contact between them. When the metals are separated or insulated in some way, galvanic corrosion is checked.

And a third factor to keep in mind is the relative areas of the two metals. If they are in contact with each other, make sure that the parts having the smaller area are more noble than those having the larger area.

Application

With these principles as a guide, you can tell which metals are apt to produce strong galvanic corrosion. And you can tell which are relatively safe to use in contact with each other. For example, Monel fastenings could be used on a steel tank holding a liquid without fear of galvanic corrosion.

Why? Because the relative areas of the two metals are such that the area of the less noble metal, steel, is much greater than that of Monel. Since the magnitude of the galvanic action depends to a large extent on this area ratio, corrosion in the steel will not be accelerated to any appreciable extent.

Two good suggestions

1. Write for our free booklet, *Corrosion-Processes, Factors, Testing*. It contains a thorough explanation of galvanic corrosion, with data on the characteristics of Monel, Nickel and Inconel.

2. If you have a metal problem, take it up with INCO's Corrosion Engineering Service. Available data from their files for a particular combination of metals will be furnished wherever possible. And Corrosion Engineering will be glad to help you apply general principles of galvanic corrosion control to your specific problems.

GALVANIC SERIES OF METALS AND ALLOYS

Corroded End (anodic, or least noble)	▼
Magnesium	▼
Magnesium alloys	▼
Zinc	▼
Aluminum 25	▼
Cadmium	▼
Aluminum 175T	▼
Steel or Iron	▼
Cast Iron	▼
Chromium-iron (active)	▼
Ni-Resist	▼
18-8 Stainless (active)	▼
18-8-3 Stainless (active)	▼
Lead-tin solders	▼
Lead	▼
Tin	▼
Nickel (active)	▼
Inconel (active)	▼
Brasses	▼
Copper	▼
Bronzes	▼
Copper-nickel alloys	▼
Monel	▼
Silver solder	▼
Nickel (passive)	▼
Inconel (passive)	▼
Chromium-iron (passive)	▼
18-8 Stainless (passive)	▼
18-8-3 Stainless (passive)	▼
Silver	▼
Graphite	▼
Gold	▼
Platinum	▼
Protected End (cathodic, or most noble)	▼



THE INTERNATIONAL NICKEL COMPANY, INC.

67 Wall Street, New York 5, N. Y.

When inquiring check CP 6090 on handy form, pgs. 2-3

NEW LITERATURE

Groups equipment by corrosion resistance

Two-color, 68-page catalog shows processing equipment and stresses special equipment for corrosion problems. Food equipment is considered as well as chemical, pulp and paper, mining, construction and petroleum processing units. All of these are grouped under categories of corrosion, abrasion and heat resistance properties.

Corrosion discussion suggests alloys to be used. Detailed specification charts are included as well as ten pages of data on weight, area, hardness, and standard conversion tables. Catalog 175 is issued by Electric Steel Foundry Company, Dept. CP, 2141 N.W. 25th Ave., Portland 10, Ore. When inquiring specify CP 6092 on handy form, pages 2 and 3.

Case histories given for welders

Welding problems solved for centrifugal separator, screw conveyor shafts, and cement mill pinions, as well as other equipment, are reviewed in the 2nd quarter issue of the "Ampco Welding News" issued by Ampco Metal, Inc., Dept. CP, 1745 S. 38th St., Milwaukee 46, Wis. When inquiring specify CP 6093 on handy form, pages 2 and 3.

Foam rubber samples in catalog

Manufacturer of closed cellular rubber offers a revised, enlarged catalog with card having actual samples of 12 types. Fully detailed chart is included, showing the properties as improved to meet ASTM Standards D-1056-49T and ASTM testing methods.

Having minute cells of nitrogen under pressure, product differs from sponge rubber in being impervious to moisture, extremely sanitary, resilient, and at least equal to cork as insulation. It is supplied in sheets of various sizes and thicknesses and may be die cut to specification. Rubatex catalog and sample sheet are issued on letterhead request to Rubatex Division of Great American Industries, Dept. CP, Bedford, Va.

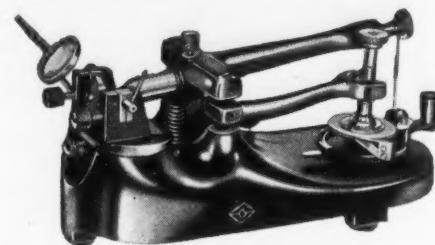
Instrument tubing shown

Two-page bulletin shows plastic coated tubing for instruments. "Dekoron Instrument Tubing" is issued by Dekoron Tubing Div., Samuel Moore & Co., Dept. CP, Mantua, Ohio. When inquiring specify CP 6094 on handy form, pages 2 and 3.

CAMBRIDGE

ROCKING MICROTOME

CUTS SECTIONS DOWN TO 1/5 MICRON



15" x 7" x 8"

This moderately priced instrument is designed specially for cutting extremely thin sections for use with the Electron Microscope. The sections cut with this Microtome are ribboned, which makes it most convenient for studies of sections serially. Will accommodate Gillette razor blade or special Microtome knife. Fitted with magnifying lens for observing work in progress.

Write for Bulletin L 293.

CAMBRIDGE INSTRUMENT CO., INC.

3706 Grand Central Terminal, New York 17, N.Y.
PIONEER MANUFACTURER OF PRECISION INSTRUMENTS

When inquiring check CP 6095 on handy form, pgs. 2-3

NEW

WILLSON
DUST HOOD

Lightweight
and
Comfortable

Style No. 2
with No. 46 Respirator.
Available without respirator.

- Wide vision acetate window 33 sq. in.
- Windows interchangeable, replaced in a matter of seconds.
- Can be used with any Willson single filter respirators for dusts, mists, gases, vapors.

See your nearest WILLSON distributor or write us direct.
WILLSON PRODUCTS, INC., 227 Washington St., Reading, Pa.
Dependable Products Since 1870

When inquiring check CP 6096 on handy form, pgs. 2-3

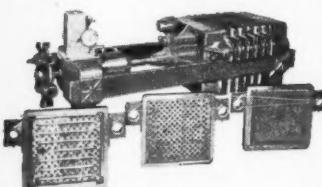
CHEMICAL PROCESSING

GET YOUR *Filter Facts* STRAIGHT

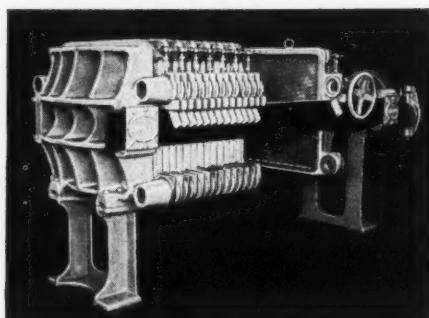


THESE ARE STRAIGHT FACTS ON SHRIVER FILTER PRESSES

- Lowest in cost per square foot of filtering area.
- Versatile—can be used on any filterable material, no matter how heavy, thick or viscous.
- Recovers solids—reasonably dry, firm, easy to handle.
- Clarifies perfectly, decolorizes, deodorizes, germproofs.
- Washes, extracts, to recover or remove soluble contents. Steams, melts or redissolves cake.
- Designed in any capacity, for any temperature and any pressure up to 1000 p.s.i.
- Made of any metal, wood, rubber, plastic for use with any filter media.



Filter press with special reinforced perforated plates and wire screen to assure free drainage; for filtering film dope at 250 p.s.i. pressure; equipped with Shrimer "Hydro-Kloser."



Large filter press with stainless steel plates and frames, side feed, closed visible discharge, washing type.

Shrimer Filter Presses

MORE UNITS IN MORE PLANTS THAN EVER BEFORE

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846 Hamilton St.
Harrison, N. J.

Name _____
Title _____
Firm _____
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City _____

Send me "Filter Facts" regularly.

Send me the Shrimer Catalog.

Zone _____

State _____

When inquiring check CP 6091 on handy form, pgs. 2-3

Totally enclosed motors described, illustrated

Two-color bulletin covers totally enclosed, fan-cooled motors in the 40 to 3000 hp range. Design uses air-to-air heat exchanger for cooling. Bulletin 05B7150A is issued by Allis-Chalmers Mfg. Co., Dept. CP, 1151 S. 70th St., Milwaukee, Wis. When inquiring specify CP 6097 on handy form, pages 2 and 3.

Outlines use of magnetic drive in speed control

Profusely illustrated 32-page booklet tells how magnetic drives are used and how they operate. Drive, used with a saturable inductance control unit, can be made to control, manually or automatically, the speed of very heavy installations. Typical applications include combustion control, all kinds of fans, compressors, ship propulsion, and cyclic loads. Six pages are devoted to the control circuits and are illustrated with graphs and diagrams as well as photographs of the equipment. All the text is clear and to the point. This booklet answers specific questions. Publication 1107 is issued by Electric Machinery Mfg. Co., Dept. CP, Minneapolis 13, Minn. When inquiring specify CP 6098 on handy form, pages 2 and 3.

Gives complete data on welded pipe fittings

Three-color catalog gives complete data on fittings from $\frac{3}{4}$ to 24" light gauge stainless steel pipe. Numerous tables give dimensions of all fittings. Two tables of friction losses are included. Catalog 1051 is issued by Tri-Clover Machine Co., Dept. CP, Kenosha, Wis. When inquiring specify CP 6099 on handy form, pages 2 and 3.

Test color, gloss, reflectance using ceramic standards

Four-color folder describes and illustrates four sets of standards for color, gloss, reflectance, and special purposes. "Ceramic Standards" is issued by Henry A. Gardner Laboratory, Inc., Dept. CP, 4723 Elm St., Bethesda, Md. When inquiring specify CP 6100 on handy form, pages 2 and 3.

Mathematics book concentrates on linear computations

Written to aid workers in a variety of fields, 344-page book shows how to solve the problem of finding numerical solutions for sets of simultaneous linear equations. Since equations of this sort may be arrived at from statistical or non-statistical data, the book is arranged to make basic computational methods available to readers who have a basic knowledge of algebra. In later chapters, however, the introduction of determinants and matrices allows the use of concise proofs of important results for the convenience of well-trained mathematicians and statisticians.

Accumulations of errors when computations involve approximate numbers is an important problem to the research worker. Chapter 2 deals with approximate numbers and Chapter 17 with errors of linear computation. Chapter 18 is concerned with translating general mathematical theory into the terminology of statistics. To obtain "Linear Computations" remit \$6.00 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth Ave., New York 16, N. Y. When inquiring specify CP 6101 on handy form, pages 2 and 3.

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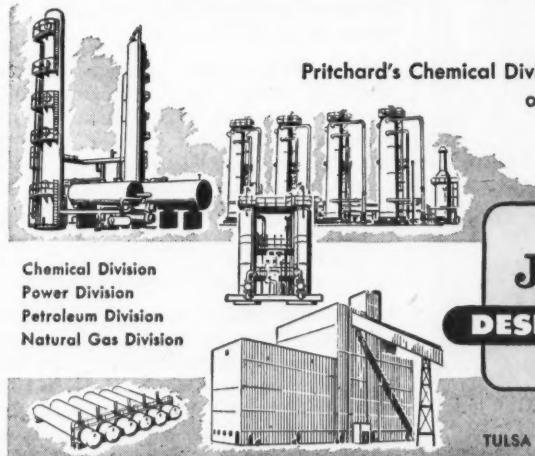
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When inquiring check CP 6102 on handy form, pgs. 2-3

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When inquiring check CP 6103 on handy form, pgs. 2-3

Page 100

NEW LITERATURE

Air control valve catalog revised

Catalog revisions apply to manufacturer's Catalog 100-4 and include: light-duty 2-position 4-way valves, 2- and 3-way valves, and poppet-type hand control valves.

Specifically this includes: pages 1 (table of contents), 26, 27, 29, 30, 31, 43, and 44 (not in previous catalog), 45, and 46. Revised sections provide engineering data, illustrations, dimensional drawings, and additional valve models plus changes in model numbers.

Issued by The Logansport Machine Company, Dept. CP, Logansport, Indiana. When inquiring specify CP 6104 on handy form, pages 2 and 3.

Reports on equipment for vegetable oil clarification

Four-page mimeographed report discusses application of pressure leaf filter to the clarification of vegetable oil. Topic headings are: principle of operation; construction; filter materials; filter sizes; flow rates and filter sizes and filter costs; filter residue; pressure range cleaning operation; and, engineering and laboratory service. Form HF/313 is issued by Hercules Filter Corp., Dept. CP, 204 21st Ave., Paterson, N. J. When inquiring specify CP 6105 on handy form, pages 2 and 3.

Pipeline pressure control gives maximum safe throughput

Data sheet shows controller system capable of preventing overpressuring sections of a multistation pipeline. Device maintains maximum safe pressure, records input and output pressures at the station. Data sheet 7.2-1 is issued by Brown Instruments Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Station 40, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6106 on handy form, pages 2 and 3.

Shows protective coatings

Six-page folder, "Low Cost Corrosion Protection" explains pigmented coatings. Issued by Permalite, Inc., Dept. CP, Hamilton, Ohio. When inquiring specify CP 6107 on handy form, pages 2 and 3.

Comprehensive survey presents mineral oil information

Primary object of book was to introduce previously unpublished method for structural group analysis. In considering recent separation methods and many other investigations into petroleum analysis, however, the work grew into a fairly comprehensive survey of present knowledge of mineral oil constitution. The five main parts of the book cover 1) Classification of oils by composition, 2) Genesis of mineral oil, 3) Constituents of mineral oil, 4) Structural group analysis of mineral oil fractions, and, 5) Applications of structural group analysis.

An improved method of analysis is treated at length. This n-d-M (refractive index, density, and molecular weight) method provides a procedure for determining carbon distribution and ring content of olefin-free petroleum fractions boiling above the gasoline range. It is especially intended for "natural" petroleum fractions distilling above the gasoline range, and for similar products after extraction, refining, hydrogenation, etc. Method has also been shown to give reliable results for synthetic oils prepared



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When inquiring check CP 6108 on handy form, pgs. 2-3

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When inquiring check CP 6109
on handy form, pgs. 2-3

AUGUST, 1951

NEW LITERATURE

by polymerization, olefin-free paraffin waxes, residual oils, and samples containing sulfur up to 2%, nitrogen up to 0.5%, and oxygen up to 0.5%. Application of the n-d-M method is not recommended for aromatic extracts, alkylated aromatics, samples with more than the above figures in sulfur, nitrogen, or oxygen, or for individual hydrocarbons.

The 484-page book, "Aspects of the Constitution of Mineral Oils" contains 108 figures and numerous tables. References are given by chapter and in an author index. To obtain, remit \$9.00 direct to Elsevier Press, Inc., Dept. CP, 402 Lovett Blvd., Houston 6, Texas. When inquiring specify CP 6110 on handy form, pages 2 and 3.

Precision metallograph is only 12 x 12 x 18 inches

Compact, 12 x 12 x 18 inches high instrument is complete and self contained. Can be used for studying large or small samples of metal or other material. Four-page bulletin shows photomicrographs of hypereutectoid steel at 400X to 3400X, all taken with this instrument. "OPL Metallograph" bulletin is issued by F. T. Griswold Mfg. Co., Dept. CP, 305 W. Lancaster Ave., Wayne, Pa. When inquiring specify CP 6111 on handy form, pages 2 and 3.

Outlines rod mill applications

Twelve-page bulletin covers history, application, design, and general action of rod mill grinding. Further sections are concerned with wet and dry grinding, construction and accessories of the mills. The rod mill, bulletin points out, is not a universal grinding method. In heavy installations, however, better economy in reducing 1" or larger feed to 6 to 20 mesh is reported for the rod mill than for any other method of grinding. Several installations including the largest rod mill in existence are pictured. Largest mill handles 8,600 tons of lead-zinc ore per day and is powered by a 1000 hp motor. Bulletin 25-C is issued by Hardinge Company, Incorporated, Dept. CP, 240 Arch St., York, Pa. When inquiring specify CP 6112 on handy form, pages 2 and 3.

Second edition adds material to silicone chemistry

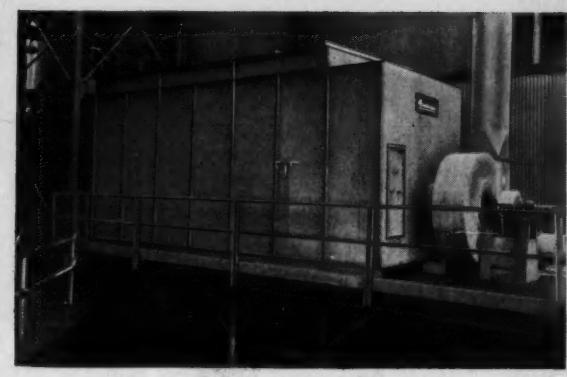
Illustrated 213-page book covers the chemistry of the silicones, including much up-to-date material. Marked industrial success of the silicones has caused this revision. New chapters deal with the carbon-silicon bond, synthesis of organosilicon compounds, the physical chemistry of the silicones, enlarged tables of physical properties, and an extensive bibliography. Tables of compounds, and references are organized as a separate chapter and classified for quick reference.

This volume aims at being a compact survey of information valuable to the chemist, engineer, and designer. It covers only the chemistry that is not to be found in conventional organic chemistry books. Starting with simple covalent compounds of silicon, text deals with synthesis of organosilicon compounds, organosilicon monomers and polymers, properties of specific polymers, water repellent films and protective coatings, production considerations, and analytical methods. To obtain "Introduction to the Chemistry of the Silicones", 2nd edition, remit \$5.00 direct to John Wiley & Sons, Inc., Dept. CP, 440 Fourth New York 16, N. Y. When inquiring specify CP 6113 on handy form, pages 2 and 3.

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When inquiring check CP 6114 on handy form, pgs. 2-3

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Weldco is available in Monel, Stainless, Inconel, Nickel and other alloys, in sizes from 3" to 30" O. D. Other sizes for special applications. Whenever you need light-weight, high-strength tubing, specify Weldco and be sure of getting the best.

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When inquiring check CP 6115 on handy form, pgs. 2-3

NEW LITERATURE

Technical data offered on soya copolymer

Publication on soya copolymer includes data on compatibility, film properties, and a number of enamel formulae. Product is described as being a medium to long polymer with exceptionally good dry and better than average exterior durability.

Contributing hardness, toughness, and chemical resistance, it is recommended for white gloss enamels, flat enamels, exterior enamels, and clear varnish blends. Technical Bulletin 92 is issued by Archer-Daniels-Midland Co., Dept. CP, Box 839, Minneapolis 2, Minn. When inquiring specify CP 6116 on handy form, pages 2 and 3.

Three-way valve has many uses

Four-page illustrated specification sheet gives three examples of the uses of three-way air-operated diaphragm motor valves. Automatically controlled valves can be used for feeding either one stream or the other to equipment. Further uses include mixing, diverting, and proportioning.

Cutaway drawings make operation clear and special purpose parts are shown in separate photographs. Detailed data and specifications are included. Specification Sheet 416-1 is issued by Brown Instruments Div., Minneapolis-Honeywell Regulator Company, Dept. CP, Station 40, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 6117 on handy form, pages 2 & 3.

Compact dehumidifier dries instrument air

Four-page, 2-color bulletin describes and specifies dehumidifiers used for drying air in instrument lines. Units are compact, economical, and rugged. Air drying cycles vary from 6 to 8 hours. Nine models cover the range from 35 to 200 scfm at 100 psig and 70°F. Bulletin DD-130 is issued by Industrol Corporation, Dept. CP, 472 Westfield Ave., East, Roselle Park, N. J. When inquiring specify CP 6118 on handy form, pages 2 and 3.

Heat resistant paints

One-page bulletin describes five paints suitable for use on hot surfaces. Black and aluminum are available. "Speco Heat Resistant Paints for Hot Surfaces" is issued by Speco, Inc., Dept. CP, 7308 Associate Ave., Cleveland 6, Ohio. When inquiring specify CP 6119 on handy form, pages 2 and 3.



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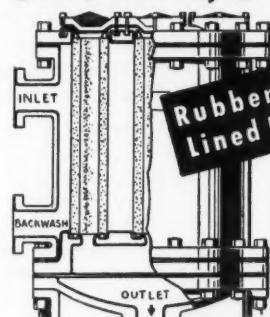


When inquiring check CP 6120 on handy form, pgs. 2-3

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When inquiring check CP 6121 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Shows applications of radiant heating

Two-color, 16-page bulletin illustrates and briefly describes some of the many tasks radiant heating is performing in industry. Applications range from hardening tank hulls in a 300-ft furnace to sealing blood plasma flasks. Operations involving hardening, annealing, normalizing, and many other metal working steps are shown as performed, in many cases on a production line basis. Bulletin S-6.3 is issued by the Selas Corporation of America, Dept. CP, Philadelphia 34, Pa. When inquiring specify CP 6122 on handy form, pages 2 and 3.

Volume deals with adsorption — theory and application

Bringing this phase of the Chemical Engineering Series up to date, this 634-page second edition contains 135 tables, and 273 figures. Volume attempts to correlate the practical, commercial, and engineering aspects of adsorption. A 24-page chapter early in the book outlines the mathematical and theoretical process, and further theory is included in an appendix of broad scope.

Coverage of the book in the field of applied adsorption is excellent, running from separation of 10 mg samples of rare earths using neutron radiation and a Geiger counter for detection, to full scale processes of ion exchange, wax refining, and sugar decoloration. Discussion is centered around two viewpoints: roughly 200 pages devoted to adsorbents, covering their manufacture, specific uses, and difference in properties; and, the balance of the work dealing with methods, processes, and application of principles. This latter field includes such topics as ion exchangers, solvent recovery, gas masks, and odor removal.

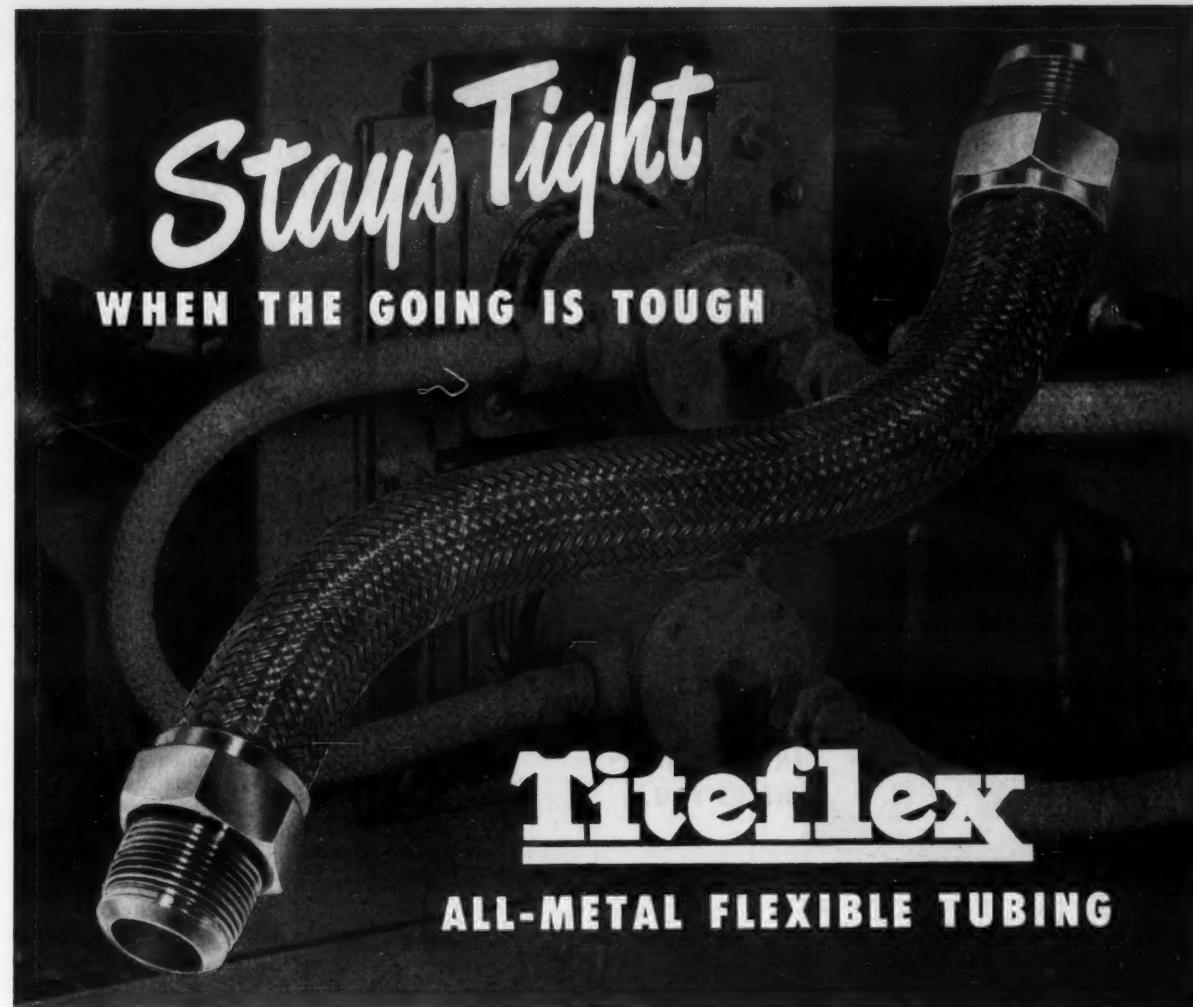
Further applications get into fractionation of gases, liquid hydrocarbons, and ions. Two very interesting chapters are concerned with chromatographic, medicinal and pharmaceutical problems. To obtain "Adsorption," by Mantell, remit \$9.00 direct to McGraw-Hill Book Company, Dept. CP, 330 W. 42nd St., New York 18, N. Y.

Practical time-motion study outlined in book

Book aims at seeing the whole time-motion study problem rather than synthesizing it from elements. Author points out that small savings may seem to be effected, but at great payment in psychological attitude. Chapter topics run from basic questions of the study of human motion and motion rhythm and harmony to practical points like body posture, relaxation allowances, and work psychology. Illustrated with charts and photographs, book has 140 pages. To obtain "Dynamic Motion & Time Study," by Gillespie, remit \$3.75 direct to The Chemical Publishing Co., Dept. CP, 26 Court St., Brooklyn 2, N. Y. When inquiring specify CP 6123 on handy form, pages 2 and 3.

Condensed catalog deals with non-mechanical instruments

Two-color, 44-page catalog illustrates and describes more than 100 non-mechanical instruments. U type, well type, and multiple tube manometers are included as well as inclinometers, draft gauges, liquid level gauges, sight feed bubblers, and accessories. Package units for industrial and aircraft calibration and testing are featured. Catalog C-12 is issued by Merriam Instrument Company, Dept. CP, 10940 Madison Ave., Cleveland 2, Ohio. When inquiring specify CP 6124 on handy form, pages 2 and 3.



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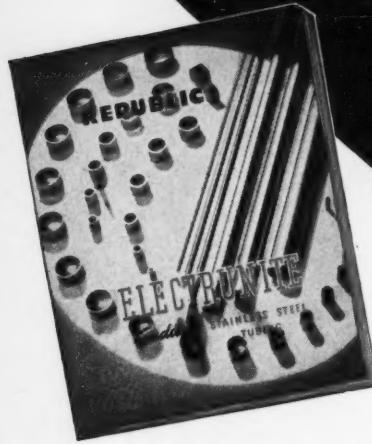
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When inquiring check CP 6125 on handy form, pgs. 2-3

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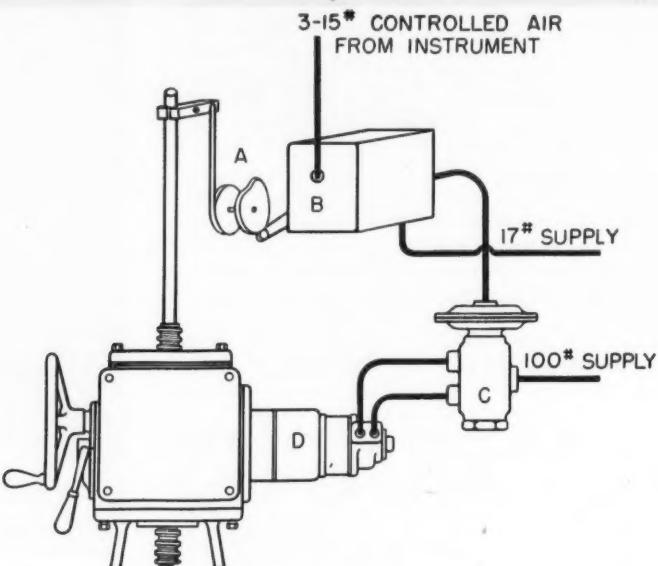
When inquiring check CP 6126 on handy form, pgs. 2-3

Positioning of Large Slide Valves Calls for Normal Plant Air Supply



Rotomotor mounted on a valve yoke ready for shipment

Operator eliminates problems of maintenance and safety usually experienced with hydraulic operators in pumping, piping, and containing hydraulic fluids



Here's how the Rotomotor works: Positioning device (B) determines actual valve stem position by means of tape and cam connection (A) and determines desired stem position by air impulse from control instrument. Corrected output air pressure from (B) then is fed to auxiliary pilot (C) which ports main air supply to pneumatic motor (D), driving gear box clockwise or counter-clockwise, repositioning stem, and completing pneumatic control loop.

USES: For positioning large slide valves that are commonly used for throttling control services with spent and regenerated catalyst, back pressure control of flue gases, etc., in catalytic cracking processes.

Features: Positioning is accurate, sensitive, and positive. Operating entirely from normal plant air supply, it is reported to eliminate the problems of maintenance and safety usually experienced with hydraulic operators in pumping, piping, and containing hydraulic fluids. Installation is reported to be a fraction of the capital expenditure for hydraulic operators.

Description: "Rotomotor" is basically a self-locking mechanism that operates through a gear drive and threaded stem. A continuously connected handwheel

and declutching lever provide for manual operation if that is desired. Repositioning is accomplished by means of a tape type device which permits long travels with accuracies of valve stem positioning to within 1/500th part of the total valve stroke. Rotomotors are available in a number of models for various travels, speeds, stem diameters, and thrust loads.

Units are compact, complete with all internal piping, and can be mounted in the valve manufacturers' factory and shipped to the refinery as complete units.

Source: Development of the Conoflow Corporation, Dept. CP, 2100 Arch St., Philadelphia 3, Pa. . . . or for more information check CP 6127 on handy form, pages 2 and 3.

**Constant weight feeding
governed by unique
feed gate control . . .**

movable wedge transmits proper amount of power for constant feeding without inertia

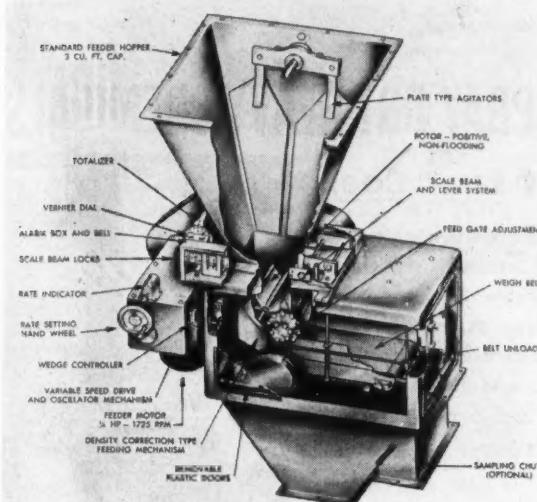
Uses: For constant weight feeding of granular or free flowing materials as, for example, in a continuous process.

Features: Combined rotary and vibrating feeding mechanism gives an accurate rate of delivery and reduces the tendency for over-and-under operation.

Description: The Chemizer chemical feeder consists of a hopper, feed mechanism and weighing belt. As material is deposited on the belt it is constantly weighed by a simple beam scale having the whole of the belt section on one end balanced against sliding weights on the other. Rate is maintained by changing the amount of feed from the hopper so that when the weight of material on the belt is low, feed is increased.

This mode of operation normally tends to result in a constant oscillation of the feeder between over and under feeding. A novel feature of the Chemizer, however, tends to reduce this tendency and give a more constant rate. The main bulk of the feed is maintained by a rotary hopper valve. But control of the flow rate is accomplished by a vibrating flap which changes the clearance of this valve with the hopper outlet. As vibration amplitude increases, so does the feed.

In order to link the vibrating flap to feed rate demand without incurring inertia — which would also tend to make for oscillating operation — a gap is left between the vibrating armature and the flap member. A rubber wedge which



Cutaway drawing shows principal parts of constant weight feeder

is linked to the balance beam hangs in this gap. When more feed is called for, the wedge is lowered into the gap. This increases the displacement of the flap and the amplitude of its vibration.

The model shown in this illustration handles from 5 to 5000 lb/hr of filter alum. Its capacity varies somewhat with the material being fed. A 1/4 hp motor connected to the belt through a variable speed transmission is the means of control. Five-figure register indicates the amount fed and an over and under alarm are standard equipment.

Source: The Chemizer is a development of Omega Machine Company, Dept. CP, P.O. Box 1342, Providence, R.I. . . or for more information check CP 6128 on handy form, pages 2 and 3.

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the complete line of SHARPLES continuous centrifuges your assurance of unbiased recommendations

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Highest centrifugal force commercially available (13,200 x G) is developed by this tubular bowl continuous centrifuge. Easy to clean, it can be used to separate immiscible liquids with small differences in specific gravity or to effectively clarify liquids.

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This disc type, continuous centrifuge utilizes the stratification principle which is most effective in concentrating a liquid or solid phase suspended in another liquid.

NOZJECTOR

Solids are continuously discharged from the disc type bowl of this high efficiency centrifuge which is widely used for separation of two immiscible liquids containing solids, or for the concentration of solids in a liquid phase.

DV-2 CENTRIFUGE

Solids ranging from firm to slimes and sludges are handled by this versatile centrifuge, with continuous solids discharge. Available as a clarifier to remove solids from liquids; or a separator, to separate two immiscible liquids in the presence of solids.

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An extremely flexible, completely automatic centrifuge for recovery and dehydration of crystals. Efficiently handles slurries with 15 to 60% solids. Each step of feed, rinsing and drying can be individually controlled.

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When inquiring check CP 6129 on handy form, pgs. 2-3

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of →

"Humidity Engineering"
with the **Kathabar System**

A glass and plastics industry leader has placed 6 repeat orders with Kathabar since 1947 for its production glass laminating and its research laboratory.

* Send for further Kathabar information today on your company letterhead.

SURFACE COMBUSTION CORPORATION, TOLEDO 1, OHIO
KATHABAR DIVISION

When inquiring check CP 6130 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

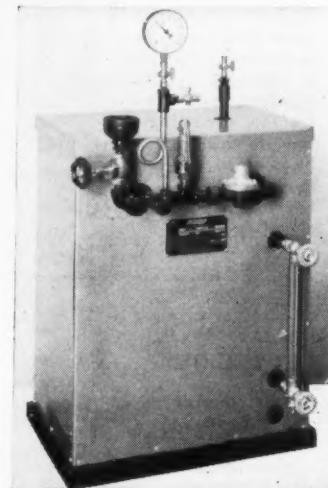
15 and 50 psi boilers supply 45 lb steam per hr . . .

electrically heated package units cut off when water is low

Uses: These low pressure units are used to supply small quantities of steam for process, or where a temporary supply is needed.

Features: Since heating is accomplished by current flowing through the water itself, current requirements drop as water becomes low. No current is drawn unless there is some water in the boiler.

Description: Model LP (max pressure 15 psi) and Model 400 (max pressure 50 psi) Speedylectric Boilers are available for 220, 440, or 550 v single phase power. Units are 14" wide, 22" long, and 28" high. When



steaming at maximum heat output of 50,000 Btu/hr they produce about 45 lb of steam each hour and operate at their maximum rating of 15 kw. Current requirements at this maximum rate is 68 amp at 220 v and correspondingly less at higher voltage. Both models may also be rated as 1½ boiler hp.

Model 400 is an ASME Code Boiler carrying National Board Stamping and Insurance Company Certificate for pressures up to 50 psi. The low pressure boiler is generally exempt from code requirements. Both boilers are Underwriters' Laboratories listed. Pressures are adjustable within the stated pressure ranges and no pressure switches, thermostats or relays are used. Boilers can be used on open or closed systems.

Source: Development of Livingstone Engineering Company, Dept. CP, 100 Grove St., Worcester 5, Mass. . . or for more information check CP 6131 on handy form, pages 2 & 3.

**Better Service
from steel drums
through chemical resistant linings**

Drums will have to work harder during the shortage. Put your steel containers into fit condition for extra service by asking your supplier to use a Unichrome Drum Lining made to stand repeated trips in contact with strong chemicals.

By using these linings, many newly developed chemicals, as well as various acids, alkalies, alcohols, petroleum derivatives, wetting agents, foodstuffs, cleaners, salt and other solutions can be securely shipped without damage to lining, corrosion of container and contamination of contents. Write us for information on linings available and the tough chemicals each can withstand.

UNICHROME

COATINGS FOR METALS

Products of UNITED CHROMIUM, INCORPORATED
100 East 42nd St., New York 17, N. Y. • Detroit 20, Mich. • Waterbury 20, Conn.
Chicago 4, Ill. • Los Angeles 13, Calif. • In Canada: United Chromium Limited, Toronto, Ont.

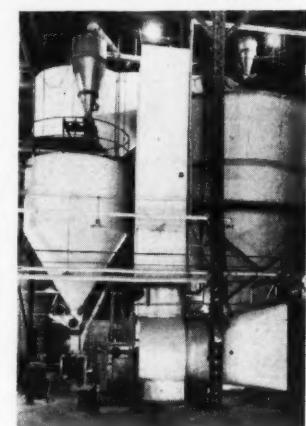
When inquiring check CP 6132 on handy form, pgs. 2-3

SPRAY DRY HEAVY CHEMICALS

at Low Cost

This high-capacity equipment is especially suitable for handling heavy chemicals. It is direct fired with oil or gas, and gives amazingly low-cost operation.

Typical uses: silica gel, kaolin clay, manganese sulfate, calcium carbonate, chrome sulfate, sodium phosphates.



Swenson Spray Dryers successfully handle a wide variety of organic and inorganic chemicals.

Send for Bulletin D-105

SWENSON EVAPORATOR CO.

Division of Whiting Corporation
15667 Lathrop Ave.

Harvey, Illinois

When inquiring check CP 6133 on handy form, pgs. 2-3

**Sectionalizing fluid-end
simplifies maintenance
of direct flow pump . . .**

applications include use in chemical handling, hydraulic systems and oil field service

Uses: Applications include service in oil field for secondary recovery, salt water disposal, crude and gathering lines. Also suitable for recycling or handling of lean oil, butane, propane, lithium chloride, diethylene glycol and other liquids.

General industrial applications involve die casting, plastic molding, rubber molding, lead cable extrusion, brass,

aluminum and carbon extrusion. Also, synthetic processing through high pressures and many operations requiring central hydraulic systems.

Features: Liquid is passed in a straight line directly through the working barrel. Design eliminates two right angle turns in the fluid-end block. This reduces "loss space" in the fluid-end. Fluid-end is sectionalized in

construction, simplifying maintenance. Change in plunger size can be readily made to meet alterations in pressure or capacity.

Close clearance design provides high volumetric efficiency. Removable stuffing boxes are provided to permit adapting a wide range of plunger sizes to the pump.

Entire fluid-end can be made of stainless steel or other material for handling special liquids.

Description: This 3" direct flow pump is an addition to maker's 5" stroke series ranging up to 275 hp, 6" stroke to 300 hp and 7" stroke from 1450 to 2450 hp.

Two sizes of fluid-ends are available to make possible use of any size plunger ranging in diameter from 1-3/8 to 2-1/2 inches.

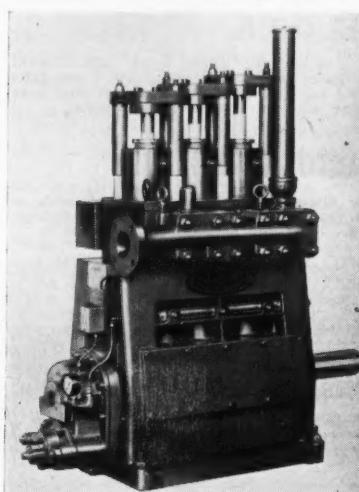
Plungers are high carbon steel, alloy steel or other material suitable to meet condition of service and ground to size as required.

Frame is totally enclosed and contains the lubricating oil reservoir. An oil pump driven from the crankshaft forces lubricant through the rifle-drilled shaft, through the connecting rods to the wrist pins, and with a separate line, to the crossheads and crosshead guides.

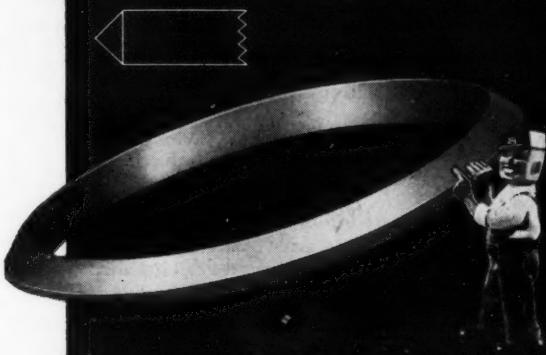
Drive can be by electric motor, steam engine, steam turbine or internal combustion engine. A wide range of drive connections is offered.

Power range on this 3" is up to 50 hp; pressures to 3,800 psi; displacement up to 96 gpm (3275 bbl/day) at 790 psi, 500 rpm.

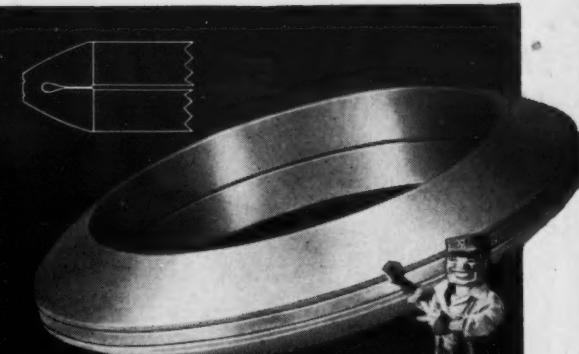
Source: Direct flow pumps are built by The Aldrich Pump Co., Dept. CP, Allentown, Pa. . . or for more information check CP 6134 on handy form, pages 2 and 3.



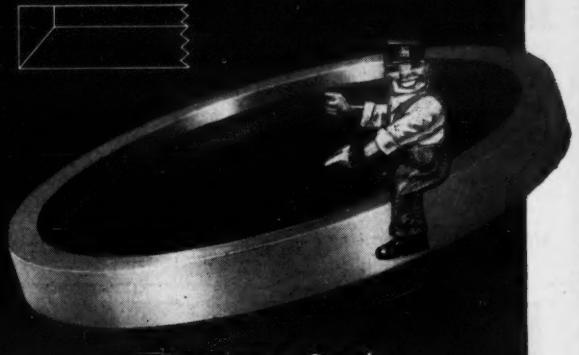
**Need special-
high pressure
gaskets
such as these?**



Delta Joint
Gasket



Flare-type Gasket
with Bellows Action



Pressure Seal
Joint Gasket

We tailor them to your specifications

If you require high pressure gaskets made to extremely close tolerances—for service exceeding 10,000 psi, for example—and fabricated to any desired diameter or cross-section, why not look into the special service that Goetze offers for making these gaskets to your order.

The gaskets shown above are typical of the wide variety for high pressure service that have been made to order for Goetze customers. The flare type gasket with bellows action illustrated at upper right is but one example of what Goetze "know-how" can accomplish.

Goetze has had over sixty years of experience in making specialized metallic gaskets for industry's most complex jobs. Modern machines—many of them specially designed and built by Goetze—enable Goetze craftsmen to produce gaskets of any required design, shape or size...and deliver them with remarkable promptness.

For further information about Johns-Manville Goetze gaskets, write for a copy of the new Goetze Gasket Catalog. Or send us a drawing or template for assistance on your specific problem. Address Johns-Manville, Box 290, New York 16, N. Y.



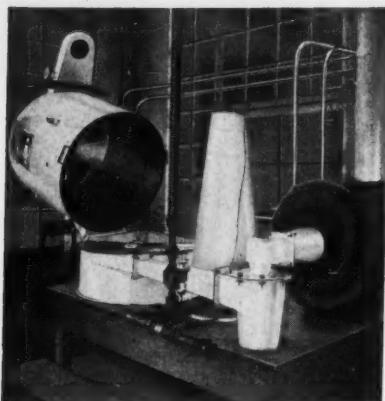
Johns-Manville Goetze GASKETS

THERE'S A JOHNS-MANVILLE PACKING
AND GASKET FOR EVERY SERVICE.

When inquiring check CP 6135 on handy form, pgs. 2-3

The Bowen Laboratory Spray Dryer

...MEETS ALL REQUIREMENTS FOR:
SMALL LOT PRODUCTION OF VALUABLE MATERIALS
AND LABORATORY RESEARCH AND DEVELOPMENT



Hinged Chamber open for cleaning

The Table Model is "scaled-down" from Bowen commercial spray dryers. The unit can be used for actual small lot production or for test work where data obtained is used for design of production units.

Since 1926 Recognized Leader in Spray Dryer Engineering

When inquiring check CP 6136 on handy form, pgs. 2-3

BOWEN
ENGINEERING, INC.

NORTH BRANCH 1
NEW JERSEY



METALAB

LABORATORY EQUIPMENT

Out of this world in **QUALITY...**

Down-to-Earth in **ECONOMY**

Imagination in Lab Equipment?
Yes, but also the sound business virtues
of Economy, Efficiency, and Long Life.

Let METALAB help you plan—without obligation.
Write for Complete Catalog.

SECTIONAL LABORATORY FURNITURE
and EQUIPMENT by

M E T A L A B
Equipment Corp.

230 DUFFY AVE., HICKSVILLE, L.I., N.Y.

When inquiring check CP 6137 on handy form, pages 2-3

PROCESSING EQUIPMENT

Glassware cleaner penetrates speedily . . .

employs combination of agents to effect great penetration

Uses: Cleaning compound is used for graduates, beakers, and general laboratory glassware.

Features: Tremendous penetrating power is reported for this cleaner.

Description: Lab-Kleen Concentrate is a combination employing a sequestering detergent containing polyphosphates. It rinses freely and is reported to be economical to use. Viscosity is maintained in the 170-175 Stormer sec range, and a 2% solution has a pH of 8.16. Material is practically odorless and stable to oxidation.

Source: Available from Chemical Manufacturing & Distributing Co., Dept. CP, Easton, Pa. . . . or for more information check CP 6138 on handy form, pages 2 and 3.

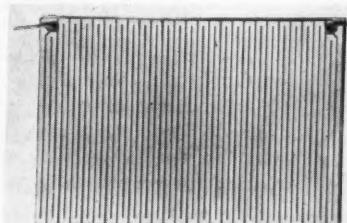
Radiant process heat
to 300°F available
from glass panels . . .

grid protected by heat resisting
enamel; easily installed

Uses: To meet requirements for uniform electrical heat in production processes where operating temperature desired is up to 300°F.

Features: In addition to standard sizes, special sizes are available.

Description: An aluminum grid, about one-thousandth of an inch in thickness, is fused to the back of a quarter-inch tempered glass panel.



Glass radiant heating panel

Heat resisting enamel protects the grid from atmospheric corrosion and abrasion in handling. Plate is equipped with two clamp-type terminals for connecting wires.

Operating temperature is up to 300°F; temperature control is by thermostatic switch or by means of a basic design, so that wattage input matches radiation conditions. Rating is 115 and 230 v, and two 16 x 24" plates may be operated in series on 460 v. Wattage is maximum of 3 w per square inch with

FILTER MEDIA for Chemical Processing

FILTER PAPER

LABORATORY . . . INDUSTRIAL . . . Made from finest materials for accuracy and dependability . . . light and heavy weights . . . slow and fast filtering speeds . . . large stock maintained . . . cut to any size and pattern . . . samples furnished for experimental purposes.

FILTER CLOTH

Cottons, wools, felt, glass, nylon, silk, vinyon, saran, metal mesh and many other synthetic materials cut and sewn in all shapes and sizes . . . many weaves, weights and finishes.

ASBESTOS PADS

Quality filtering pads furnished in a range of grades varying in porosity and filtering characteristics. Sizes and shapes for all needs.



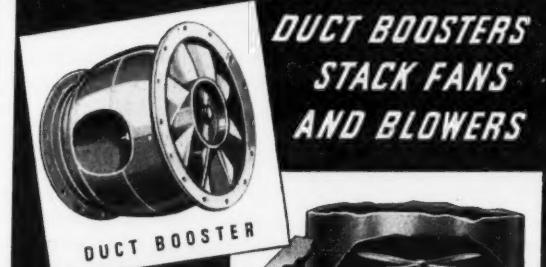
FILPACO INDUSTRIES
The FILTER PAPER CO.

2432 S. Michigan Ave. Chicago 16, Ill.

When inquiring check CP 6139 on handy form, pgs. 2-3

Solve your Ventilating
Problems with

INTERNATIONAL



DUCT BOOSTERS
STACK FANS
AND BLOWERS



If you have a problem of
forced draft or ventilation,
send for descriptive litera-
ture showing typical
installations in ships and
industrial plants,
apartment houses
and public buildings.

ASK FOR BULLETIN No. 109

INTERNATIONAL ENGINEERING, INC.

DAYTON 1, OHIO

NEW YORK - 15 PARK ROW

CHICAGO - 407 S. DEARBORN ST.

When inquiring check CP 6140 on handy form, pgs. 2-3

CHEMICAL PROCESSING

RELAX!



*Let the
"ELECTRIC
EAR"**
run
your
mill.*



The only device of its kind that controls the feed rate in grinding mills by listening to the sound of the rotating load.

It compensates for changes in hardness, size of feed, etc. — producing a more uniform oversize, increasing mill capacity 10 to 20%, and freeing the operator for other duties.

State your grinding problem and ask for Bulletin 42-13.

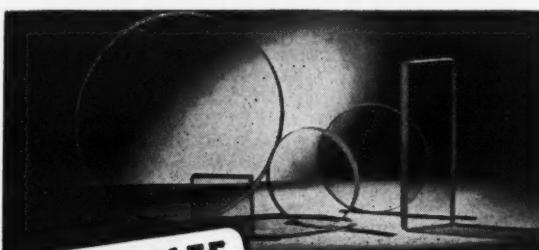
*Reg. U.S. Pat. Off.

HARDINGE COMPANY, INCORPORATED

YORK, PENNSYLVANIA — 240 Arch St. Main Office and Works

NEW YORK 17 • SAN FRANCISCO 11 • CHICAGO 6 • HIBbing, MINN. • TORONTO 1
122 E. 42nd St. 24 California St. 205 W. Wacker Dr. 2016 First Ave. 200 Bay St.

When inquiring check CP 6141 on handy form, pgs. 2-3



**IMMEDIATE
DELIVERY**

on *Pyrex*
HEAT RESISTANT
SIGHT GLASSES

Now you can get Sight Glasses without delay cut or ground in any shape from PYREX Heat Resistant Polished Plate Glass—for use on ovens, absorption columns, evaporators, stills, pressure vessels—wherever heat resistant glass is desirable.

These heat-resistant Sight Glasses resist clouding and pitting, as well as all chemicals except HF and strong, hot caustic solutions. Special cutting and grinding equipment enables Swift to supply Sight Glasses in rounds, squares, rectangles, odd shapes in 8 different thicknesses, from $\frac{1}{8}$ " to 1" and in any size that can be made from a 24" x 60" plate. Write, wire, phone for quotations. Bulletin on request.

SWIFT LUBRICATOR CO., INC.

31 West 14th Street • Elmira, New York

When inquiring check CP 6142 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

plate in free air at room temperature. Minimum size of plates is 6 x 14" or equivalent area; maximum 16 x 28". Special sizes can be made to order.

Optional types of glass include: Luminex, almost transparent, indeterminate pattern; and Diffusex, a small slightly raised pattern, which is less transparent.

Source: Ra-Grid heater plates are made by Blue Ridge Glass Corp., Dept. CP, Kingsport, Tenn. . . . or for more information check CP 6143 on handy form, pages 2 and 3.

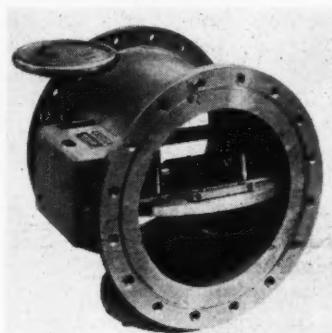
Elimination of levers increases safety of 16" vacuum valves . . .

butterfly type; easy to operate, has full scale indicator

Uses: Especially designed for all high vacuum service.

Features: Only a fraction of the size of usual corresponding rubber diaphragm valve. Compact and easy to operate. Only 10 turns of wheel are necessary to open and close valve in a few seconds.

Safety of operation is accomplished by elimination of levers which might strike back, and the worm wheel action automatically locks the valve in



10 turns of wheel open, close

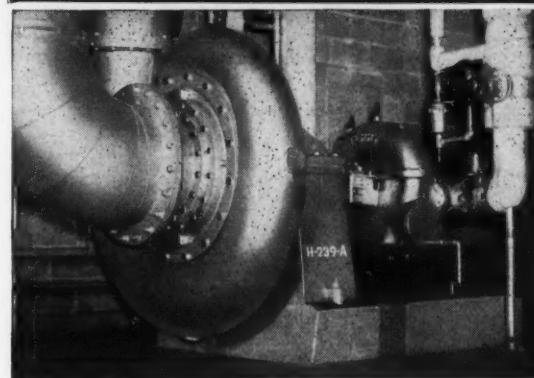
any position when it is opened under vacuum. Handwheel is connected to a worm gear drive which enables the operator to spin the flywheel after it has started.

Description: Valve is designed for pressure differential in both directions. Positive seal is obtained through cam actuation of the valve disc. Full scale indicator shows extent to which valve is opened or closed. Valve is available in special metals for corrosive applications.

Source: 16" high vacuum valves are built by F. J. Stokes Mfg. Co., Dept. CP, Philadelphia 20, Pa. . . . or for more information check CP 6144 on handy form, pages 2 and 3.



*"always glad to see you...
but we seldom need help!"*



CENTRIFUGAL

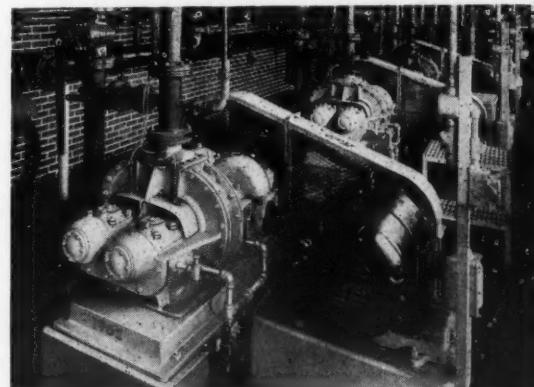
Type QIB Centrifugal Blower used for processing in a large eastern plant. Capacity 12,000 cfm. Similar R-C Blowers are utilized in other plants of this company.

The works manager of a large plant made this friendly statement to a Roots-Connersville representative. What he really meant was that R-C Blowers and related equipment perform so satisfactorily and dependably that they seldom need anything more than routine inspection by his own men.

In large and small plants, in every industry, R-C products uniformly give this kind of reliable operation. They continue to deliver rated capacities, year after year, with a minimum of maintenance—whether a small Rotary Positive Blower of 5 cfm capacity or a Centrifugal unit moving up to 100,000 cfm. And remember, only Roots-Connersville gives you this important dual-choice.

If you are planning a new plant, expansion, or replacements, R-C engineers will work with you to select the equipment best fitted to your needs. Almost a century of experience is at your service.

ROOTS-CONNERSVILLE BLOWER CORPORATION
510 Richland Avenue, Connersville, Indiana



ROTARY

Battery of three RCG Gas Pumps to handle gas in chemical plant; capacity of each, 200 cfm. A similar battery and several other R-C Pumps are used in this same plant.

ROOTS-CONNERSVILLE
ONE OF THE DRESSER INDUSTRIES

BLOWER BUILDERS SINCE 1864

When inquiring check CP 6145 on handy form, pgs. 2-3

THE SPRING

IS THE THING



AJAX

SPIRAL WOUND GASKETS

The Gaskets with resilience "built in," to make positive, lasting seals. Made for all types of pipe flanges, pressure vessels, and for boiler manholes, handholes, tube caps, water walls, economizers and other boiler accessories. A trial will end your gasket troubles.

OTHER STANDARD INDUSTRIAL GASKETS

In addition, we offer a complete line of corrugated metal and metal-asbestos gaskets; solid metal, serrated and profile types. Sold universally through Industrial Distributors. Ask your Supply House or write

THEY BREATHE WITH VARYING PRESSURES AND TEMPERATURES

LIGHTER BOLT LOADS. SAFER SEALS

NO DRIP—NO SQUIRT—NO HISS

UNITED STATES GASKET COMPANY

618 N. 10th Street

Camden 1, N. J.

Leading Fabricators of "TEFLON" for the Chemical, Process and Electronic Industries.

When inquiring check CP 6146 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

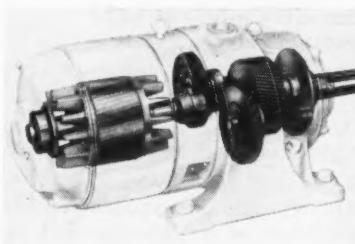
Higher torque in small space . . .

gearmotor uses two secondary pinions to drive output gear

Uses: Gearmotors with ratings of 5 to 25 hp and speeds from 30 to 84 rpm.

Features: Produces high torque at low speeds while occupying only a fraction of the space required by a conventional drive.

Description: The Type GL Syncogear uses two secondary pinions to drive the output gear. Such design is reported to double the effective torque



Phantom view of gearmotor

rating of a conventional single pinion and gear unit. A splined herringbone pinion divides the load equally between the two secondary pinions.

Unit has asbestos protected windings, normalized castings, solid centricast rotors, and "Lubriflush" lubrication.

Source: U. S. Electrical Motors, Inc., Dept. CP, 200 E. Slauson Ave., Los Angeles 54, Calif. . . . or for more information check CP 6147 on handy form, pages 2 and 3.

Ion exchange unit has 2 separate resin beds in one tank . . .

ion exchange resins need no acid or caustic for regeneration

Uses: Softening water and removing alkalinity and sulfates for boiler feedwater, human consumption, etc.

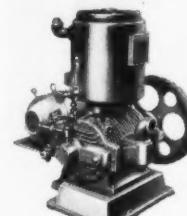
Features: Resins are regenerated with plain salt.

Description: Two resins are held in separate beds in the same tank. Design of the unit eliminates the need for much elaborate equipment. This simple design of the "Dual Bed" unit leads to speculation on its future use with diesel engine cooling water and other small jobs.

Source: Development of Permitut Company, Dept. CP, 330 W. 42nd St., New York, N. Y. . . . or for more information check CP 6148 on handy form, pages 2 and 3.



Type SS . . . for vacuum up to 5 mm. on tight systems, for dry or semi-wet work. Capacities 6 to 375 c.f.m.



Type RP . . . for vacuum up to 10 microns or better on dry or wet work. Capacities 17 to 845 c.f.m.

For All Vacuum Requirements in Process or Lab
Up to 10 Microns or Better...

BEACH-RUSS ROTARY VACUUM PUMPS

- Faster Pump Down
- Superior Mechanical Efficiency
- Longer, More Dependable Service

Ask us to put your name on the mailing list for "Much Ado About Nothing" . . . the Beach-Russ house organ that keeps its readers posted on the latest developments in vacuum processes.

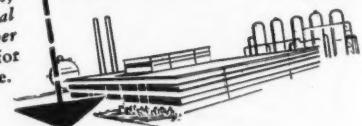
BEACH-RUSS COMPANY

46 CHURCH STREET • NEW YORK 7, N. Y.

When inquiring check CP 6149 on handy form, pgs. 2-3

In plants which actually manufacture the acids and alkalies you use, Prufcoat has been providing positive protection against costly corrosion for over 10 years now . . . on concrete floors, walls, ceilings, structural steel, tanks and other equipment. Write for Prufcoat literature.

Where Acids or Alkalies Destroy
Prufcoat PROTECTS



NOW!

A WHITE ENAMEL THAT STAYS WHITE

Write today for folder on Prufcoat BX White Enamel—the acid and alkali resistant white coating that stays white, inside or outside. Can be applied to moist surfaces.

Prufcoat Laboratories, Inc.
50 East 42nd Street
New York 17, N.Y.



Preventive Maintenance PAYS!

When inquiring check CP 6150 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

Rapid cooking, thorough mixing provided by twin agitators and rotary path of steam . . .

swirling action constantly drives steam around oversize jacket, results in uniform heating

Uses: Designed especially for processing viscous materials, and for service involving sanitary requirements.

Features: Offers all sanitary advantages of stainless steel plus rapid, uniform cooking. Oversized jacket section affords larger steam-holding area. Multiple steam inlets (2 or more depending on capacity of kettle) promote faster distribution of steam. Special nozzle-baffle assembly, installed in connection with each inlet, diverts and directs steam into a high velocity rotating stream. This swirling

action drives steam around jacket. Heated surfaces are swept clean of condensate and non-condensable gases and formation of air pockets is prevented. Formation of insulating film on shell of kettle is avoided.

Sanitary shaft couplings permit complete removal of entire twin agitator assembly from kettle in a few seconds, yet these cannot come apart during operation. Secondary high speed mixer can be of a variety of designs

to provide most suitable action for type of mixing, blending or beating involved in the process. These mixers are interchangeable for use on numerous materials, or at different stages in the process cycle.

Design of kettles and agitators permits easy, thorough cleaning, simplifying complete observation of sanitary requirements. Mixing action is extremely thorough, and material is continually moving away from heated side walls into secondary mixer, within two revolutions of the main agitator.

Description: These steam jacketed kettles can consist of any of the maker's standard design units such as deep type, shallow type, tilting, self-contained gas (or electric) models.

Power unit consists of a totally enclosed vertical motor, mounted directly on a gear housing, containing hardened steel helical gears running in oil. It drives two mixing shafts: (1) a slow speed shaft at the center of the kettle, operating the main agitator frame; (2) high speed gear shaft located centrally between center shaft and outside arm.

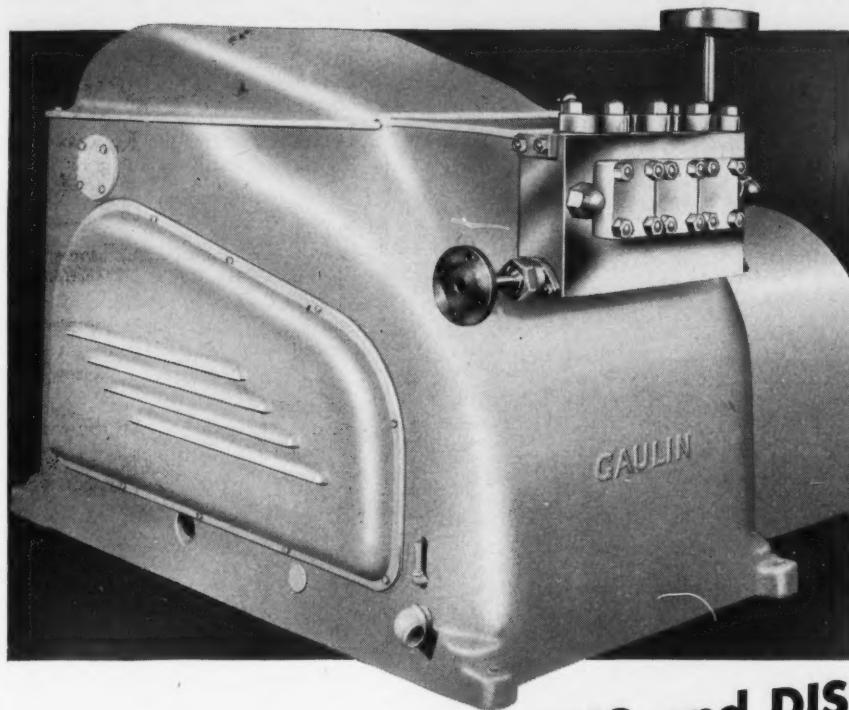
Anchor type frame is fabricated of heavy tubes and fitted with shovel type scrapers. These cannot come off during operation but are easily removed for cleaning.

Source: Model TA kettles with "Rota-Therm" jacket are built by Groen Mfg. Co., Dept. CP, 4535 West Armitage Ave., Chicago 39, Ill. . . or for more information check CP 6151 on handy form, pages 2 and 3.

AUGUST, 1951



Stainless jacketed twin-shaft kettle



Available in any capacity from 25 to 4000 gallons per hour — with operating pressures up to 8000 PSI.

7 Typical EMULSIONS and DISPERSIONS IMPROVED by **GAULIN** Homogenizers

FATS & OILS — for uniform, stable emulsions and viscosity control.

WAXES — for emulsions of maximum stability and shelf-life.

SOAPs — for complete saponification, and improved manufacturing control.

ESSENTIAL OILS — for maximum flavor or odor from a minimum quantity of oil.

COSMETICS — for a smoother, better-looking product.

PIGMENT DISPERSIONS — for a finer, more uniform suspension with minimum temperature rise.

LATEX & RESINS — for more uniform monomer emulsions and better polymerization control.

And there are many more, each with its own set of reasons for using Gaulin Homogenizers. But there's one they *all* agree upon — Gaulin Homogenizers are a **FASTER, MORE ECONOMICAL** way to make uniform and stable emulsions or dispersions.

Why not investigate today. Complete testing facilities and engineering advice are yours without obligation.

WORLD'S LARGEST MANUFACTURER OF HOMOGENIZERS

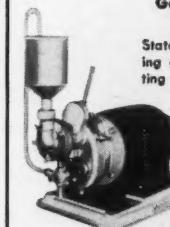
Gaulin Pilot Plant Homogenizer

Ideal for experimental purposes, operation or process requiring 25 gallons per hour capacity. Handles quantities as small as one pint. Available on low rental basis.



Gaulin Two-Stage Colloid Mill

Stator is jacketed for cooling or heating. Gap setting adjustable for .001" to .045". Only 4.5 seconds cleanup required in changing colors. 12" head room, 12" x 17" floor area.



Manton Gaulin
MANUFACTURING COMPANY, INC.

55 Garden Street, Everett 49, Massachusetts

When inquiring check CP 6152 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

• DIRECT
HEATING OF
VAPORS

• DIRECT
HEATING OF
LIQUIDS

• DOWTHERM
INDIRECT
HEATING

• STEAM
SUPERHEATERS

• WASTE
HEAT
BOILERS

• STEAM
GENERATORS

... place the selection of the specific type in specialized hands...and obtain optimum efficiency.

Petro-Chem Development Company engineers are heating specialists...they can supply the whys and wherefores of indirect versus direct heating and the economics of both.

Every day more than 750, oil and gas fired, Petro-Chem Iso-Flow installations in the petroleum, chemical and allied industries, demonstrate the efficiency of their design and installation.

PETRO-CHEM DEVELOPMENT CO., INC.
120 East 41st Street, New York 17, N. Y.

Representatives:

Bethlehem Supply, Tulsa and Houston • Flagg, Brackett & Durgin, Boston • D. D. Foster, Pittsburgh • Faville-Leavally, Chicago • Lester Oberholz, Calif.

When inquiring check CP 6153 on handy form, pgs. 2-3

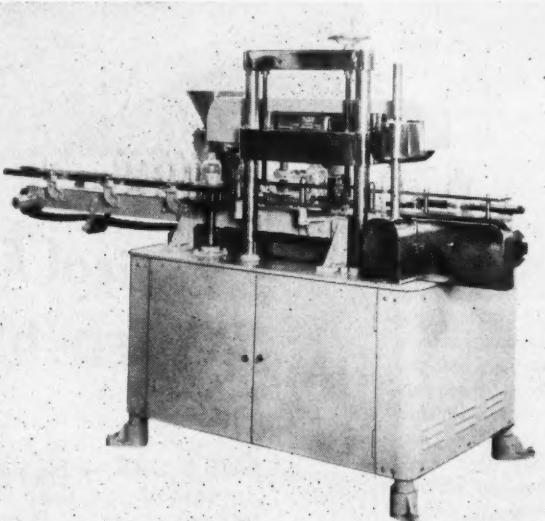
Automatically labels up to 75 bottles, cans per minute . . .

handles bottles from fractions of an ounce to gallons; labels up to 5" wide by 6" high

Uses: For labeling any type of container made of paper, tin, plastic, metal, or glass.

Features: Handles containers from fractional ounces to gallons, applying labels accurately and clearly. Labels as small as a postage stamp up to 5" wide by 6" high can be used. Unskilled operators can make adjustments for differing sizes of label and container.

Description: MRM labelers can be furnished singly with a rate of 75 containers per minute or in duplex style with double that rate. All the working parts of the single unit are enclosed in a cabinet. A special vertical adjustment control accommodates containers of any height and



Adaptable to large variety of containers, unit labels up to 75 per minute

also prevents round containers from spinning. Containers are spaced by a delivery star which controls vacuum so that, when no containers enter the star, vacuum is cut. Labels are held in cartridges, and extra cartridges may be loaded while the unit is in operation so that no time is lost in changing. Power, including that for the vacuum pump, is from a $\frac{3}{4}$ hp motor. Unit takes floor space 3' x 7'6", and has an intake and discharge conveyor 7'6" long.

Source: Made by the MRM Company, Inc., Dept. CP, 191 Berry St., Brooklyn 11, N. Y. . . . or for more information check CP 6154 on handy form, pages 2 and 3.

Automatic thermal protection cuts out vertical motors from line when overloads occur . . .

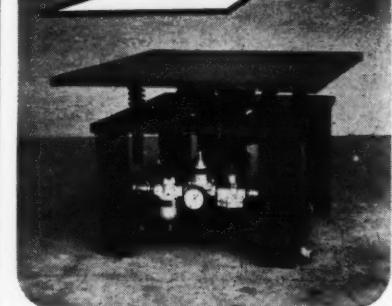
accessory provided especially for use with motors in ratings of less than 2 hp

Uses: For vertical motor requirements in rating range of $\frac{3}{4}$ to 5 hp.

Features: Construction provides protection from physical damage, electrical breakdown, operating wear and tear.

Description: Vertical, solid-shaft capacitor motors, featuring standardized mounting dimensions and quiet operation. Dimensions of the type P base, machined to

FABLE OF
A TABLE



ONCE upon a time (Actually it wasn't very long ago) two men got together across a desk to discuss a problem. (What's new about that?)

This particular problem involved powdered dry colors which were being placed in containers from an overhead storage bin.

The one man (a Potential Customer) said these dry colors were sticking and not settling fast enough. The other man (he was from Cleveland Vibrator, of course) said he thought a Cleveland Vibration Table was the answer.

The big deciding point was that, with a Cleveland table, the material could be rushed, moved gently, or slowed down to a walk.

In other words, with Cleveland air vibration tables, the intensity of vibration can be varied at will, thanks to a pressure control regulator.

Perhaps this fable of a table will suggest how you, too, can package your chemicals. Our catalog has more details.



2707 Clinton Ave. • Cleveland 13, Ohio

When inquiring check CP 6155 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEMA standards, are the same as those of polyphase motors of the same size, permitting interchangeability without modification of the mounting.

As accessory equipment for use with these motors, in ratings of 2 hp and less, an automatic thermal protective device is offered which disconnects the motor from the line when the limiting temperature is reached because of overload, high ambient temperature, inability to start and similar difficulties.

Source: Tri-Clad vertical motors are built by General Electric Co., Small & Medium Motors Div., Dept. CP, Schenectady 5, N. Y. . . . or for more information check CP 6156 on handy form, pages 2 and 3.

**Greater capacity in less space
for chemical and refining
compressor requirements . . .**

vertical in-line-cylinder units are designed for 24 hour full load operation

Uses: For service in chemical, gas, refinery and pipeline applications.

Features: Simplified design — vertical in-line cylinders — make compressors easy to operate, inspect and maintain. High compression brings greater fuel economy. Pistons are shielded during break-in period by "Parco Lubrizing" coating and protected from distortion and scouring during temporary overloads by generous provision for cooling and lubrication. High compression contributes to added power, greater fuel economy and lower water and oil cooling load.

Air-cooled compressor cylinders permit radical changes in liner sizing. Liners can be replaced or modified without replacing either head. Very thick liners can be used because of low cylinder temperature differential. Internal manifolds are used to simplify installations and eliminate all external piping. By eliminating water-cooling, it is possible to provide oversize gas passages which are smooth and well rounded to keep pressure drop at negligible limits.

Description: HLA compressor has 17" bore and 19" stroke. It delivers 250 bhp per power cylinder at 300 rpm. Four models are available: 5, 6, 8 and 10 cylinders. Savings in space, and elimination of waste strokes are achieved through use of 2-cycle design. Designed for 24 hour full load operation. All major bearings are of precision type with interchangeable bearing inserts.

Extra long power cylinders and compressor cylinder connecting rods eliminate localized and intense side thrust on power cylinders, power pistons and crosshead supports often associated with use of short pistons and connecting rods.

Crankshafts are of one-piece forged steel construction. Upper and lower crankcases are cast of a closely controlled high tensile strength semi-steel with husky interior ribs and sections. Cast-in scavenging manifolds and water manifolds promote a clean-cut external appearance to the unit.

Respective hp of these compressors are: 5 cylinder — 1,250; 6 cylinder — 1,500; 8 cylinder — 2,000; 10 cylinder — 2,500. RPM for all is 300.

Source: HLA 17" x 19" compressors are built by Clark Bros. Co., Inc., Dept. CP, Olean, N. Y. . . . or for more information check CP 6157 on handy form, pages 2 and 3.

AUGUST, 1951

Positive Roll Adjustment Gives You Chemical Granulation!

UNIFORM



**HEAVY DUTY DESIGN
AND CONSTRUCTION**

**EXTRA LONG LIFE
"CIRCLE-CHILL" ROLLS**

**CLOSE, POSITIVE
ROLL ADJUSTMENT**

**STRAIGHT-LINE
WELDED STEEL BASE**

**POWER SAVING
"TEXROPE" DRIVE**

HERE'S A POWER-SAVING MILL that's designed to turn out chemical products consistently *uniform* in size—and built to stand the gaff of constant day-in-and-day-out usage.

Note the outstanding features of this efficient machine—listed at left. Note, too, the numerous chemical materials successfully processed on this Allis-Chalmers Style N roller mill. Chemical men from coast to coast are using this mill for the uniform granulation they want and need in their plants.

There's a size-and type for every requirement—with 9 and 10 inch diam-

ALLIS-CHALMERS Roller Mill

**RECOMMENDED FOR NUMEROUS
CHEMICAL FIELD APPLICATIONS**

Ammonium Nitrate	Neutral Phosphate
Barium Sulphate	Plaster
Calcium	Plastics
Hypochlorite	Potassium Nitrate
Casine	Reclaim Rubber
Cork	Resin
Fullers Earth	Rubber Works
Gun Powder	Silica Gel
Insulating Material	Sodium Bicarbonate
Iron Oxide	Soda Ash
Inoculating Chemicals	Sodium Nitrate
Magnesite	Synthetic Zeolite
	Zinc Salt

AND MANY SIMILAR PRODUCTS

eter rolls, 24 to 42 inch roll lengths, and one, two or three-high pairs of rolls. You pick the unit best suited for your particular application.

Get the full story from your nearest A-C sales office or write to Allis-Chalmers, Milwaukee 1, Wisconsin.

A-3334

Texrope and *Circle-Chill* are Allis-Chalmers trademarks.

ALLIS-CHALMERS

CHEMICAL MILLING AND PROCESSING EQUIPMENT



When inquiring check CP 6158 on handy form, pgs. 2-3

Page 113

PROCESSING EQUIPMENT

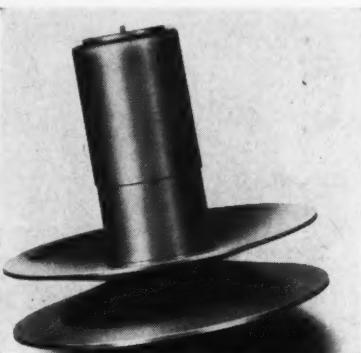
Gives controlled speed in belt driven equipment . . .

variable pitch pulley maintains alignment regardless of speed

Uses: Provides variable speed drive in the 15 hp range.

Features: Rack and gear arrangement controls sheave movement and assures belt alignment throughout the entire speed range.

Description: Roto-Cone pulley is statically and dynamically balanced. It uses a standard vari-speed rubber



READCO
CHEMICAL
EQUIPMENT

READCO Mixers facilitate FILTER CAKE HANDLING

Searching for a means of eliminating expensive, time consuming methods of handling tough, unmanageable filter cake, the manager of a large processing plant consulted Read Standard engineers.

After thorough testing and analysis of his process, Readco Spiral Ribbon Mixers were recommended and installed.

Filter cake, which was formerly scraped from the press and laboriously shoveled into drums, is now dropped into mixers where it is quickly reduced to the proper consistency.

The homogeneous, semi-liquid mass is now poured from Readco Mixers into drums ready for shipment, greatly reducing the length of processing time necessary.

Read Standard's engineering specialists in the design and application of processing equipment are available to assist you in determining the proper equipment to fit your special needs.

Read Standard manufactures a complete line of mixing, blending, sifting and material handling equipment. Read Standard Corporation, Bakery-Chemical Division, York, Pennsylvania.

ANOTHER SPECIAL PROCESSING PROBLEM SOLVED BY READ STANDARD

FORMERLY Read Machinery Division of The Standard Stoker Company, Inc. ONLY THE NAME HAS CHANGED.

READ STANDARD

CORPORATION

When inquiring check CP 6159 on handy form, pgs. 2-3

variable pitch pulley maintains alignment regardless of speed

Uses: Provides variable speed drive in the 15 hp range.

Features: Rack and gear arrangement controls sheave movement and assures belt alignment throughout the entire speed range.

Description: Roto-Cone pulley is statically and dynamically balanced. It uses a standard vari-speed rubber



Variable pitch pulley

V-belt. Operation is reported to be vibrationless and to result in longer belt life. Other sizes are available, and further information will be furnished by manufacturer.

Source: Development of Gerbing Manufacturing Corporation, Dept. CP, 11801 Milwaukee Ave., Northbrook, Ill. . . . or for more information check CP 6160 on handy form, pages 2 and 3.

High-head sump pump serves deep pits . . .

capacities from 10 to 3000 gal per minute

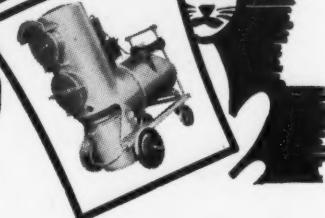
Uses: For draining sumps, pits, etc., where foul or dirty water must be handled.

Description: Pump, motor, and float control switch are mounted as a single unit. Capacities range from 10 to 3000 gpm. Maximum head is 140 ft. Since power requirements of larger models run to 75 hp, provision is made for steam turbine drive if desired.

More information is available in bulletin 4600 A.

Source: Manufactured by The Deming Company, Dept. CP, Salem, Ohio . . . or for more information check CP 6161 on handy form, pages 2 and 3.

A MAGICIAN WITH A HUNDRED ARMS



A good definition of Spencer Vacuum as applied to industrial processes, and each arm does things no man could do. It picks bran from tin plate rolls in motion. It gets inside the smallest tanks, the most delicate instruments, and fast moving products on a conveyor line. It removes liquids, metals or dust and it conveys chemicals, foods and sand by the ton.

Imagine trying to pick up globules of mercury every hour in an instrument plant or cleaning 500 acres of factory every night. Then write for the Spencer Bulletin 144 describing 132 unusual things that are being done with Spencer Vacuum every day.

THE SPENCER TURBINE COMPANY • HARTFORD 6, CONNECTICUT

SPENCER
HARTFORD

439-G

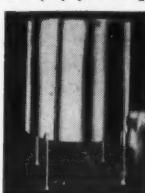
When inquiring check CP 6162 on handy form, pgs. 2-3

LOMAX STAINLESS STEEL STORAGE • MIXING • PROCESSING TANKS

LOWER FIRST COSTS

LOWER ALL-AROUND COSTS

Modern streamlined welded construction throughout. STOCK OR TO YOUR SPECIFICATIONS. All over the world chemical, food and beverage processors say, "When you buy Lomax; you buy Quality" developed in more than a quarter-century of experience. It will pay you to get the facts.



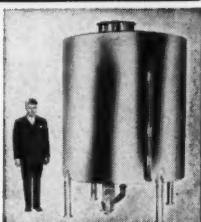
OUR ENGINEERS
ARE AT YOUR SER-
VICE FOR FREE PLAN-
NING & ESTIMATES.

NEW 3-5 GAL PORTABLE FILTER

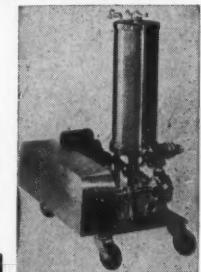
Handy, efficient, pre-
cision-built. Easily
portable. Stainless
steel and Nickel Alloy.
1/4 hp motor. Reason-
ably-priced. Write for
details.

ACT NOW FOR QUICK SHIPMENTS

FRANK B. LOMAX CO.
3518 N. HALSTED ST., CHICAGO 13



STORAGE TANKS: Stainless, Monel, Inconel, Clad. Any size; any capacity. Vertical, horizontal, stock or to order. Meet all sanitary requirements.



EASTERN SALES REPS.
KURHAN CO., INC.
261 FIFTH AVE.
NEW YORK 16, N.Y.
PHONE Murray Hill 3-0935

When inquiring check CP 6163 on handy form, pgs. 2-3

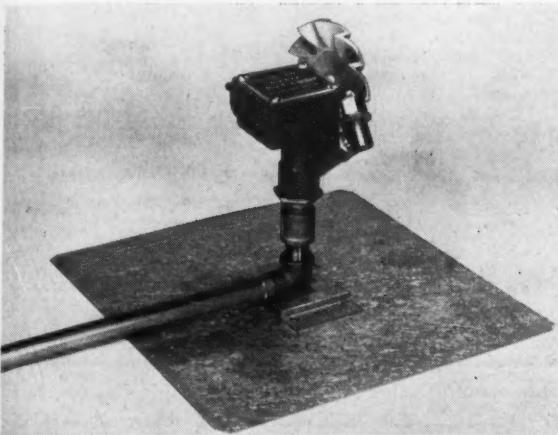
Self-powered roof cooler uses minimum water . . .

easily installed spray unit can be mounted without puncturing roof

Uses: Unit can be used as a primary cooler for building, or in conjunction with air conditioning equipment.

Features: Unit gives the same large area coverage as a rotary lawn sprinkler type, but uses far less water. Mounted with a baseplate that can be attached to roof with mastic, no bolts are needed — roof is not punctured. Fittings allow for pipe creep due to expansion.

Description: Self-powered unit is made up of nozzle inclined at 45° and turbine wheel to make stream direction oscillate and break into drops. Entire unit revolves for



coverage in all directions. Drop eared fitting provides for sliding attachment to base plate so that unit is free to move as pipe expands or contracts. Unit is assembled on a standard brass coupling which attaches directly to water line.

Source: Available from Rupright's Rotary Roof Cooler, Dept. CP, P. O. Box 6795, Los Angeles 22, Calif. . . . or for more information specify CP 6164 on handy form, pages 2 and 3.

Discard dispenser after 1000 salt tablets are used . . .

plastic unit factory sealed to assure unsoiled tablets

Uses: Dispenser contains 1000 enteric-coated salt tablets and is intended to be discarded when empty.

Features: Dispenser is factory sealed to assure unsoiled tablets. Tablets are coated to regulate salt dissolution and assist in preventing nausea — they meet all Federal specifications for this type of tablet.

Description: "Crystal-M" container is clear plastic so that complete contents are visible at all times. Tablet release mechanism requires merely slight finger or hand pressure; trigger re-cocks automatically for next user. Cone-shaped bottom of the container permits easy exit of every tablet. An easily installed bracket is available that permits quick removal and replacement of dispenser.

Source: Development of the Standard Safety Equipment Company, Dept. CP, 232 W. Ontario St., Chicago 10, Ill. . . . or for more information check CP 6165 on handy form, pages 2 and 3.



Alcoa Heat Exchanger News



Published by Aluminum Company of America

El Paso Natural Gas Company Saves $\frac{1}{3}$ in Cost of Glycol-Amine Exchanger Tubes

Rearmament needs severely limit the manufacture of aluminum heat exchanger tubes. But we realize that the purchase of refinery and processing equipment requires long study of economic and performance factors. That is the reason for this message.

About three years ago, the Fluor Corporation started investigation in corrosion problems occurring with steel exchanger tubes in gas-treating plants utilizing Fluor's glycol-amine process. They conducted extensive research to find suitable replacements for steel. (Results of these tests were reported in the April, 1950, and February, 1951, issues of "Petroleum Refiner" Magazine.) Aluminum and 4-6 cr., $\frac{1}{2}$ moly. steel tubes were most economical of the corrosion-resistant materials tested.

So when Fluor Corporation was selected to engineer glycol-amine exchangers at one of the large new plants of El Paso Natural Gas Company, they recommended Alcoa 3S-H14 aluminum tubes for the service. These tubes cost 30 per cent less than seamless mild steel and 60 per cent less than 4-6 cr., $\frac{1}{2}$ moly. steel. Fabrication of the units was done by Griscom-Russell.

Aluminum heat exchanger tubes have been so successful in resisting corrosion in glycol-amine plant service that over 100,000 pounds of aluminum are now used in that service. Experimental work has indicated over one year of service



with no sign of corrosion. In handling, shipping and fabricating costs, the aluminum tubes saved 200,000 pounds over the heavy metal tubes they replaced. Their greater ductility permits easier roll-in.

ALCOA OFFERS BOOKLET



This 24-page booklet will answer many of your questions about Alcoa Tubes. It covers fabrication techniques, alloy selection, chemical and petroleum applications. It describes tube cleaning, inhibitors, cathodic protection. It contains complete information on fluid flow and heat transfer. There are formulas, tables and specification data. Write for your free copy today. ALUMINUM COMPANY OF AMERICA, 1861H Gulf Bldg., Pittsburgh 19, Penna.

THESE APPLICATIONS ARE NATURALS FOR ALUMINUM TUBES:

Petroleum

Condensers handling hydrocarbon fractions such as gasoline, naphtha, gas, oil, etc.

Vapor recovery condensers

Lube oil coolers

Natural gas compressor after-coolers

TCC overhead condensers

Recompressor aftercoolers

Hydrogen sulfide gas coolers

Furfural condensers and heat exchangers

Propane chilling

Wax sweepers

Lean oil-rich oil exchangers

Amine solution coolers

Glycol-amine solution coolers and heat exchangers

Chemical

Butanol

Ethanol

Ethylene Glycol

Glycerin

Hydroabietyl

Isopropanol

Methanol

Phenol

Propylene Glycol

Acetaldehyde

Formaldehyde

Furfural

Heptaldehyde

Acetic acid

Butyric acid

Stearic, Palmitic, Maleic Oleic acids

Naphtha

Ricinoleic acid

Acetanilide

Ammonia

Hydrogen Cyanide

Nitric acid (concentrated)

Pyridine

Hydrogen Sulfide

Benzene

Dichlorobenzene

Gasoline

Gelatin

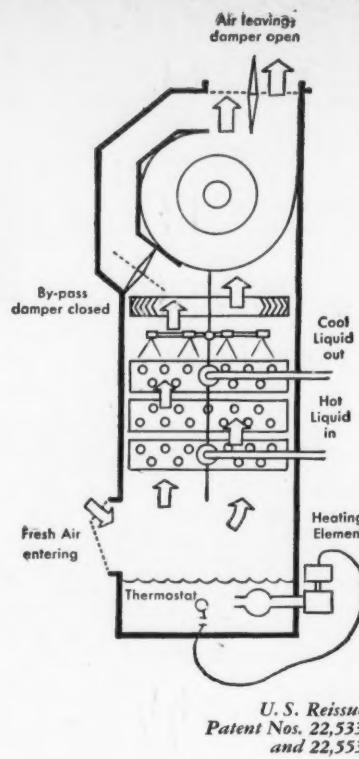
Hydrogen Peroxide

Turpentine

Xylene

When inquiring check CP 6166 on handy form, pgs. 2-3

NIAGARA Aero Heat Exchanger



1. Extends quenching capacity without extra water or cooling tower.
2. Quickly pulls down heat at initial peak load of Quenching.
3. "Balanced Wet Bulb" Control holds quench bath at proper temperature, heating if needed to start after shut-down, and cools or heats by automatic control.
4. Saves cleaning expense as compared to cooling tower which picks up acids and fumes from air.

APPLICATIONS

Quench Oils
Cutting Oils
Lubricating Oils
Cooling water and
brine
Cooling gas and
compressed air

USED IN THE MANUFACTURE OF OVER 400 PRODUCTS INCLUDING

Aluminum, copper, steel, nickel and alloys.
Diesel, aircraft, automotive and other engines.
Chemical processes, plastics, adhesives.
Gears, bearings, forgings and castings.
Wire, controls, electronic products.
Ammunition, explosives, shells, ordnance, firearms.
Farm machinery, tools, hardware.

For help in increasing production, saving of cooling water,
write for Bulletin #120. Address

NIAGARA BLOWER COMPANY

Over 35 Years' Service in Industrial Air Engineering

Dept. CP, 405 Lexington Ave.

New York 17, N. Y.

Experienced District Engineers in all Principal Cities

When inquiring check CP 6167 on handy form, pgs. 2-3

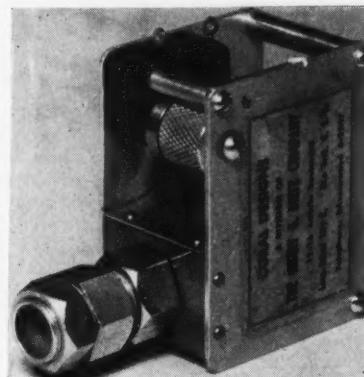
PROCESSING EQUIPMENT

**Vane in duct actuates switch
protecting air cooled tubes . . .**

prevents damage if blower fails;
device measures 1 1/2 x 2 3/4 x 2"

Uses: For use in forced air cooling of electronic equipment. Guards against tube failure in the event of blower failure or air passage obstruction.

Features: Extreme sensitivity is made possible by the use of a traveling vane in a duct, which actuates a



Air switch operates control relay

sensitive snap-action switch. Measures only 1 1/2 x 2 3/4 x 2". Mounting stud extends 1 3/8".

Description: Operates on a minimum static pressure of 0.2" water gauge. Electric ratings of 5 amperes at 250 volts, AC are Underwriters' Laboratories approved. This same design can be built in other ranges and physical dimensions to meet specific requirements.

Source: Vane type pressure air flow switch #113 is built by The Henry G. Dietz Mfg. Co.—Coral Designs Div.—Dept. CP, 12-16 Astoria Blvd., Long Island City 2, N. Y. . . or for more information check CP 6168 on handy form, pages 2 and 3.

Features engineering data on woven wire belts

Two-color, 35-page catalog features six pages of data, both general and specific, concerned with woven wire belt conveyors. Power formulae, analyses and working temperature tables, wire gauges and conversion tables are included. In addition, the publication illustrates numerous installations, giving recommendations of alloy and cloth types to be used. Catalog 31 is issued by Korb-Pettit Wire Fabrics and Iron Works, Inc., Dept. CP, 1505-15 N. Mascher St., Philadelphia 22, Pa. When inquiring specify CP 6169 on handy form, pages 2 and 3.

15 of 20 Engineers Prefer Nicholson Traps

To determine the best steam trap on which to standardize, a large processing firm recently asked their plant engineers for their preference. In 15 out of 20 plants the choice was Nicholson. The repeated adoption of Nicholson steam traps by plants currently in big "cost-reduction-through-modernization" programs is another indication of their advanced features.

To learn why an increasing number of leading plants are standardizing on Nicholson thermostatic steam traps send for our catalog.

**5 TYPES FOR EVERY
APPLICATION, pro-
cess, heat, power.
Sizes 1/4" to 2",
press. to 225 lbs.**



BULLETIN 450
or see Sweet's

W. H. NICHOLSON & CO. 181 OREGON STREET
WILKES-BARRE, PA.

Sales and Engineering Offices in 53 Principal Cities

When inquiring check CP 6170 on handy form, pgs. 2-3

NON-GALLING Stainless Steel Valves



Specifically developed for chemical lines where only stainless steel is suitable. The plug is Merchromed coated (hard-faced), ground, and lapped to prevent galling in operation. Pressurized lubricant seals ports permits easy turning and insures against leakage. Write for specifications and prices.

(Type 316)

Fig. 1625 MA-4—1" to 4"
ASA 150-Lb Class—Flanged

NORDSTROM

ROCKWELL
MANUFACTURING CO.
400 N. Lexington Ave., Pittsburgh 8, Pa.



VALVES

When inquiring check CP 6171 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

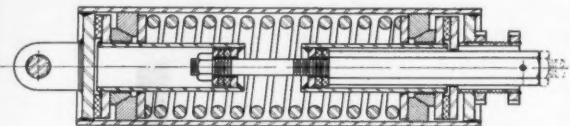
Energy absorbing feature of spring sway brace prevents resonance . . .

wedge action forces cast iron shoes against housing wall when spring is compressed

Uses: Sway brace is designed to prevent sway and control horizontal vibration of piping systems without confining the natural thermal movement or adding objectionable stresses.

Features: Energy absorbing device consists of cast iron shoes which are forced outward against the housing wall when the spring is further compressed. This imposes a large frictional hysteresis on the system when movement of either piston plate occurs.

Description: NR Sway Brace comprises a single compression type spring, confined between two movable piston plates in a welded tubular housing. Spring is precompressed so that any tendency of the pipe to move in either



Section view shows precompressed spring, movable piston plates, and wedge-type dampers

direction will be resisted by a force equal to the initial loading of the brace. Normally no stress is exerted on the piping, but should the pipe sway or vibrate, the restoring force will increase as a direct function of the movement. Brace is furnished in nine sizes with initial loadings of from 92 to 1500 lb. The maximum restoring force, at full deflection, ranges from 207 to 2250 lb.

Source: Development of Dept. 3, Bergen Genspring Corporation, Dept. CP, 15 Park Row, New York 17, N.Y. . . or for more information check CP 6172 on handy form, pages 2 and 3.

Ventilation slots omitted to make rubber-frame goggle reliably gas-tight . . .

supplied permanently riveted to respirator or as separate unit of such combination

Uses: Designed specifically for gas, fume and smoke hazards.

Features: Constructed without any ventilation slots in the rubber frame to prevent infiltration of air.

Description: Headband of the goggle enters slots in the outer goggle frame and not through a slit in the lens.

Also, screw-headed bolts on the front of the goggle are made of non-corroding stainless steel.

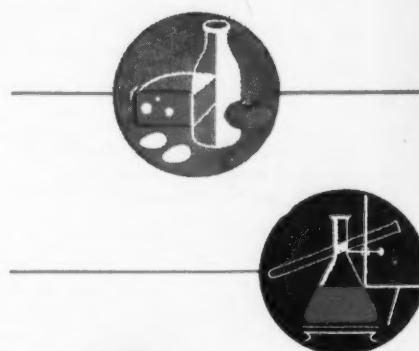
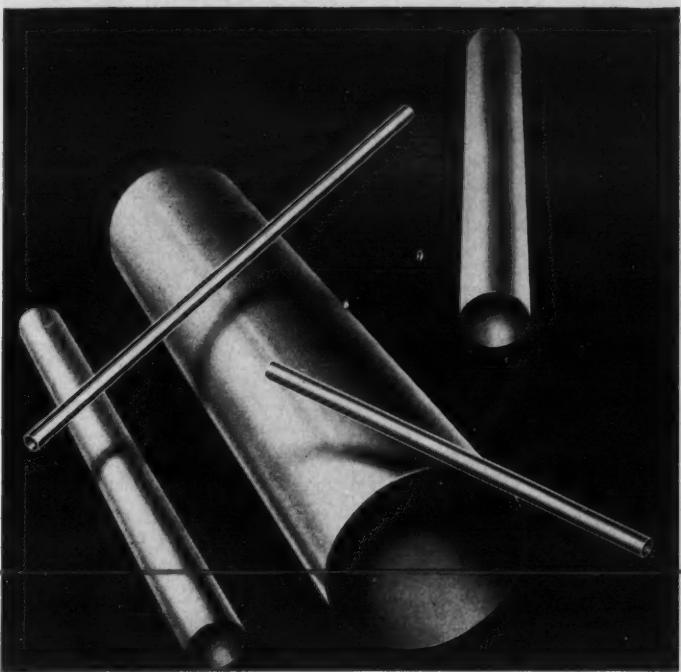
Goggle may be obtained with respirators. These combinations can be

supplied permanently riveted together or as separate units.

Source: Goggle AO 701 alone, or in combination with either R2000 or R5000 respirators, are available from American Optical Co., Dept. CP, Southbridge, Mass. . . or for more information check CP 6173 on handy form, pages 2 and 3.

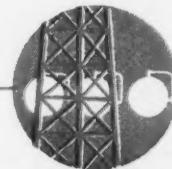


Gas-tight goggle



where stainless steel tubing

is required —



TRY TRENTWELD



Stock lines in food, paper, and chemical plants; heat exchanger units in processing industries; cooling coils in breweries, beverage industry, dairies and dairy equipment . . . throughout all industry, wherever there's a stainless or high alloy tubing application, there you'll find TRENTWELD.

And it's to be expected! TRENTWELD is made in a *tube mill by tube* engineers who roll and weld stainless and high alloy tubing *exclusively*. Then too, TRENTWELD is available in a full range of sizes — $1/8$ " to 36" in diameter. This coupled with Trent's convenient mid-continent location means prompt delivery of what you want . . . when you want it. If yours is a stainless or high alloy tubing requirement: Call on us.

TRENTWELD

STAINLESS STEEL TUBING

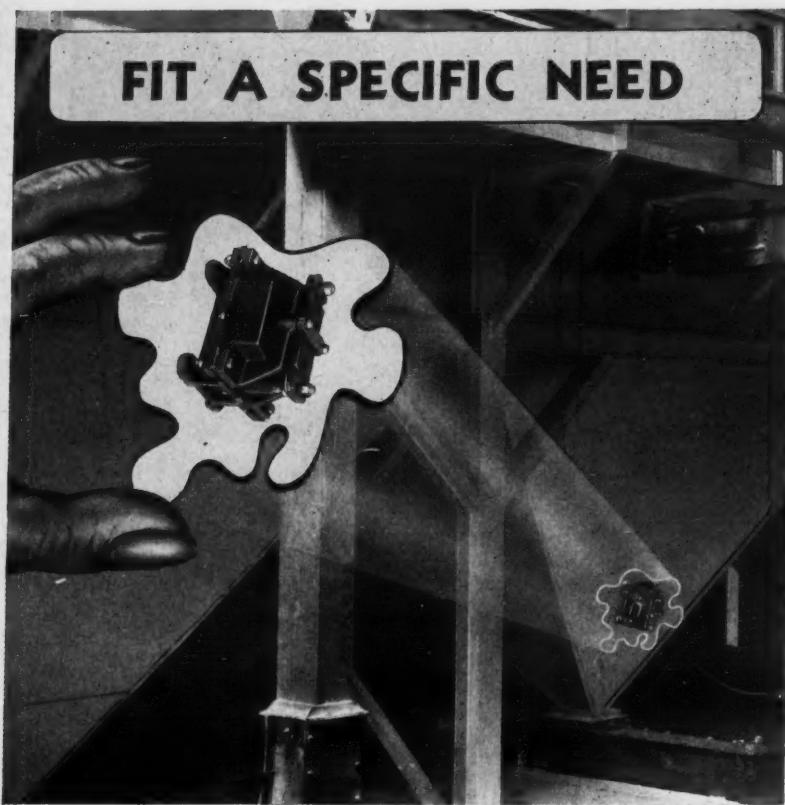
TRENT TUBE COMPANY, GENERAL SALES OFFICES, EAST TROY, WISCONSIN

(Subsidiary of Crucible Steel Company of America)

When inquiring check CP 6174 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

FIT A SPECIFIC NEED



Assure Free-Flowing Bins,
Hoppers and Chutes
with

SYNTRON

"Pulsating Magnet"

ELECTRIC VIBRATORS

with variable control of power

They are designed to meet a specific need — to eliminate the arching and plugging of bins, hoppers and chutes. Their 3600 pulsating vibrations per minute keep even the most stubborn materials flowing evenly thru bins, hoppers, chutes and screens — of any size — providing faster processing of materials without the hammering and rodding that wastes manpower and damages equipment.

Send us the details of your problem — size of bin, gauge of walls, cubic content, material characteristics — and our Engineering Department will suggest the proper model electric vibrator for your specific need.

Write for illustrated folder

SYNTRON COMPANY

110 Lexington Avenue Homer City, Penna.

When inquiring check CP 6175 on handy form, pgs. 2-3

Combine brake and drive
for quick starts, stops
of drives . . .

units mount horizontally or vertically for forward or reversing operations

Uses: Especially designed for use as initial equipment, or for replacement where frequent starts and stops are required. Used in connection with hoists, cranes and other drives.

Features: No outside power source, or special controls, are needed for applying or releasing the brake. When power is cut, it brakes and stops with 150% of normal torque. There is no creep and no backlash.

Description: Motors are available from 0.3 to 8 hp in drip-proof and 0.2 to 4 hp in totally-enclosed types.

Source: "Quick-Stop" motors are built by Brown Boveri Corp., Dept. CP, 19 Rector St., New York 6, N. Y. . . or for more information check CP 6176 on handy form, pages 2 and 3.

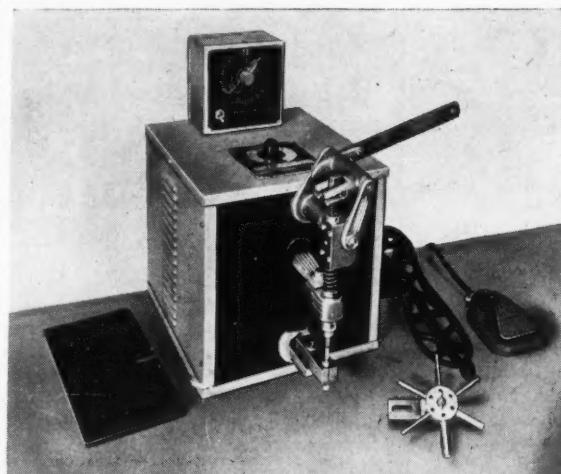
Burn out, shrinkage avoided
in spot welding, soldering
small parts, assemblies . . .

automatic cut-off controls soldering time; work held firmly during operating, cooling periods

Uses: For resistance spot welding and soldering. Machine also silver solders, soft solders and spot welds precious and dissimilar metals. Spot welds steel parts $3/32"$ in thickness and solders brass up to $1/8"$ thickness, as well as sterling silver.

Especially effective in soldering additional elements to an assembly.

Features: Automatic cut-off timer regulates soldering time. Heat control with eleven adjustments determines correct heat for the job. When dials are set, uniform



Resistance spot-welding and soldering machine

soldering time, heat, and holding pressure on electrodes are maintained, regardless of how long the foot switch is held down. Thus, all chance of work burning and consequent shrinkage is eliminated.

Description: Two models offered: No. 1000 WV, operating on 110 v AC, 9 amp; No. 2000 WV operates on 220 v AC, 10 amp and is equipped with water cooled electrode holders. Dimensions of both models are: 10"

Patterson

AGITATING EQUIPMENT FOR CHEMICAL PROCESSING

Type "PM" geared drive, turbine type agitator on closed vessel

Portable, geared Typhoon Agitator on jacketed kettle

Vessel with Type "CGM" single motion drive and paddle type stirrers

PATTERSON can supply agitating and mixing equipment for the widest range of viscosities, in standard or special designs to provide any desired degree of agitation. Send us your inquiries.

Richard L. Clegg



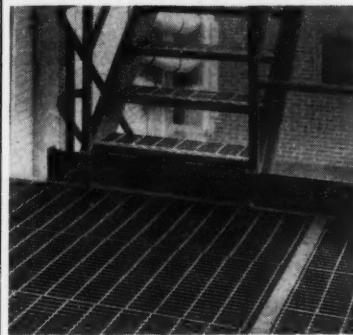
The Patterson Foundry and Machine Company
East Liverpool, Ohio, U. S. A.
NEW YORK BOSTON PHILADELPHIA PITTSBURGH
DETROIT CINCINNATI CHICAGO ST. LOUIS DENVER
HOUSTON ANGELES SAN FRANCISCO SEATTLE
The Patterson Foundry and Machine Company, (Canada) Limited
TORONTO, CANADA
MONTREAL

When inquiring check CP 6177
on handy form, pgs. 2-3

IF YOU WALK ON IT

IT CALLS FOR
OPEN STEEL FLOORING

SAFE FOOTING AT EVERY STEP



Build safe, dependable walking surfaces in your new or present industrial plant—indoors and outdoors—with Open Steel Flooring . . . the versatile, durable flooring of strength, safety, ventilation and light.

Be sure to investigate Open Steel Flooring and the new Specifications as described and illustrated in our new 16-page Idea-Book, "Versatile." Your free copy is ready to mail on request.

OPEN STEEL FLOORING INSTITUTE, INC.
2311-M First National Bank Building
Pittsburgh 22, Pa.

**WRITE
FOR IT
TODAY**



MEMBERS

These Manufacturers assure
top quality engineered grating

WALTER BATES COMPANY, INC.
Joliet, Illinois

THE TRI-LOK COMPANY
Pittsburgh, Pa.

BLAW-KNOX COMPANY
Pittsburgh, Pa.

BORDEN METAL PRODUCTS CO.
Elizabeth, N.J.

HENDRICK MANUFACTURING CO.
Carbondale, Pa.

IRVING SUBWAY GRATING CO., INC.
Long Island City, N.Y.

STANDARD STEEL SPRING CO.
Gary, Indiana

PROCESSING EQUIPMENT

long x 11" deep x 10" high, plus control box 4" high. Additional models, 1000 WH and 2000 WH are similar to standard units except they are equipped with horizontal electrodes to handle special jobs.

Set-up time for various operations is short. Electrodes are especially designed for each job. Their operation is spring action controlled so that when electrode arms are closed, work is held firmly in position during soldering and cooling.

A bakelite work table can be furnished with all vertical electrode machines at extra cost. Collars determine control pressure to protect parts soldered from excessive heat that would cause marking.

Source: Resistance spot welding and soldering machines are built by Joyal Products, Inc., Dept. CP, 56 Belmont Ave., Newark, N.J. . . . or for more information check CP 6179 on handy form, pages 2 and 3.

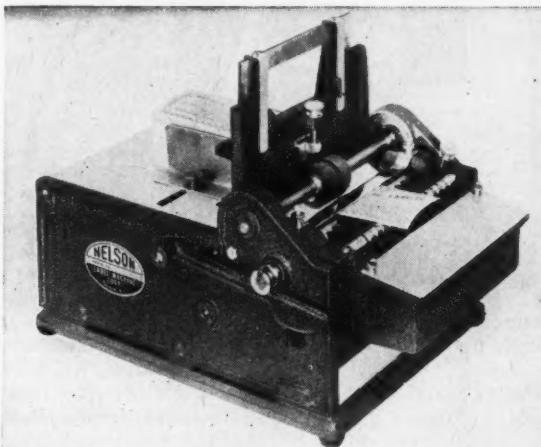
Feeds, moistens labels one at a time . . .

electrically powered label dispenser also applies glue if needed

Uses: For dispensing labels for application by hand.

Features: Labels are fed from a stack one at a time. Gummed labels can be moistened or plain labels coated with glue.

Description: Labels are friction fed from the bottom of a stack by tapping one of the two actuating levers at the sides of the dispenser. As the label is carried over the glue feed roller, a retard finger stops any further



Compact label dispenser handles gummed or plain labels

labels from coming through at the same time. Auto Feed Labeler is compact and sturdy. Weighing less than 35 lb, it can be easily carried from one section of the plant to another. Model F is pictured. It can handle labels from $1/2$ to 5" in width and any length over 2". In case of doubt, label samples should be submitted to maker.

Unit's electric motor operates on 110 v, 60 cps, but motors are available for DC, 25 cps, or other non-standard power sources.

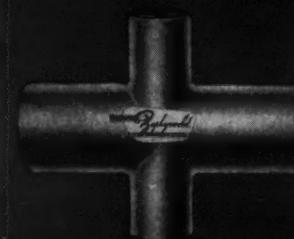
Source: Product of Nelson Label Machine Corp., Dept. CP, 39 Main Street, East Orange, N.J. . . . or for more information check CP 6180 on handy form, pages 2 and 3.

When inquiring check CP 6178
on handy form, pgs. 2-3

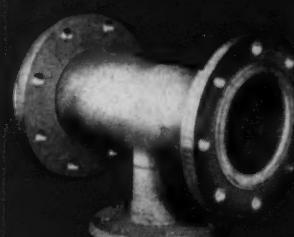
SAVE CRITICAL MATERIALS

CUT PIPING COSTS . . .

with *Zephryna* STAINLESS STEEL
SCHEDULE 5 and 10 WELDING FITTINGS



**NOW
AVAILABLE**
in I.P.S. and TUBE O.D.
sizes from the Complete
TRI-CLOVER
LINE



• Your chance to save
in piping costs . . .
in corrosion-resistant
Zephryna . . .
Cut your piping costs
with Zephryna
Schedule 5 and 10 light
weight welding fittings.

Fabricated in a full range of
welding types, in both I.P.S. and
TUBE O.D. sizes from 1/2 in. thru
12 in. . . . Zephryna fittings now available
from Tri-Clover's Complete
Line of corrosion-resistant
fittings, valves, pumps, pipe, tubing
and specialties. Stocks are also
carried in strategically located
warehouses throughout the country.

Tri-Clover
MACHINE CO.
Kenosha, Wisconsin
THE Complete Line

TRI-LOLLO AND STAINLESS STEEL
SANITARY FITTINGS, VALVES,
PUMPS, TUBING, SPECIALTIES,
THE Complete Line

TRI-CLOVER
Zephryna
STAINLESS STEEL
WELDING FITTINGS

When inquiring check CP 6181 on handy form, pgs. 2-3

- Vacuum and Pressure Filter Element Covers
- Dust Collector Tubes, Bags and Envelopes
- Anode Bags

Let US make up your
Element Coverings
from NFM Filter Media

NFM Filter Media are woven from Nylon, Orlon*, Vinyon N**, Saran, Glass and Cotton. This wide range insures your obtaining the type of element covering having the greatest degree of chemical resistance and best general all round performance for your particular operation.

NFM element coverings are accurately and durably fabricated by skilled personnel at both our New Haven and Salt Lake plants. Experience has demonstrated that filter cloth costs are at a minimum and filter performance at a maximum wherever NFM products are employed.

If you are not absolutely certain as to which type of synthetic or natural fiber is best for your use send us a complete description of your operating conditions and we'll be glad to make a recommendation. Our many years of experience mean that we have quite a fund of knowledge always at your disposal.

*TM—UCC

**TM—E. I. Du Pont de Nemours & Co., Inc.



Weavers of Industrial Filter Media for over Forty Years

General Offices & Mills: New Haven 14, Conn.

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Roselawn Center Bldg.

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1406 Second National Bank Bldg.

Oslo, Norway
Nicolai Friis

Johannesburg, South Africa
Edward L. Bateman

When inquiring check CP 6182 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

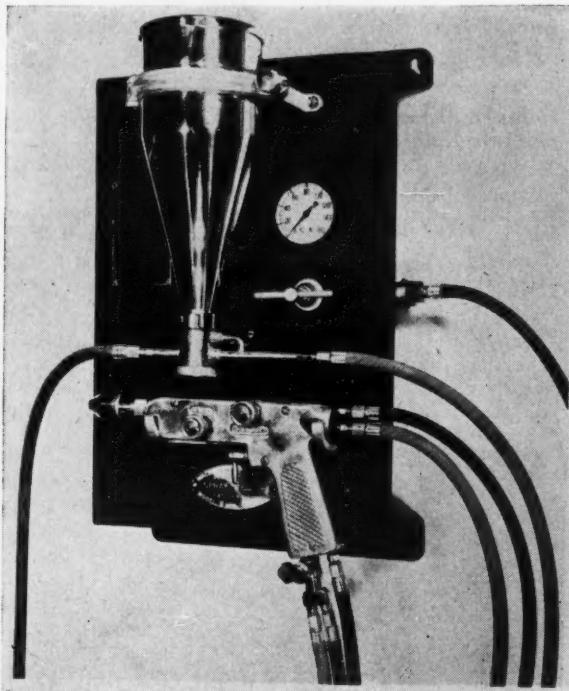
Metal spraying, bonding process improved by gun design . . .

more positive air and powder control valves, better trigger mechanism among features

Uses: As a powder metallizing unit to execute the "Sprayweld Process," which consists of applying uniform overlays of special hard facing alloys, using metallizing procedures, and then subsequently bonding the overlay to the base metal. Spraywelder can also be used to apply metal powder castings.

Features: Lightweight. Has eye-level air gauge.

Description: This recently introduced model has a greater capacity air filter and more positive air and powder



Sprays metals continuously or intermittently

control valves; also redesigned trigger mechanism and finger tip control with lock for continuous or intermittent spraying. Cooling chamber in head is larger, which contributes to steadier operation and longer tip life. Locked feed mechanism on carburetor eliminates possible change in powder feed setting.

Source: Model B Spraywelder is built by Wall Colmonoy Corp., Dept. CP, 19,345 John R St., Detroit 13, Mich. . . . or for more information check CP 6183 on handy form, pages 2 and 3.

Acid, alkali, grease resistance plus resilience combined in plastic floor tile . . .

gives extended service under heavy duty, eases strain of prolonged standing, walking

Uses: For process plant installations where operations expose floors to hard service and action of acids, alkalis, alcohols and greases. This floor tile may be applied over concrete sub-floors and wood sub-floors.

Features: Flexible, durable, quiet, skid-resistant.

Catawissa
PERFECT SEAL
Unions

HOT FORGED from solid RECTANGULAR STEEL BARS to give you SURE-FIRE PIPING DEPENDABILITY

A TYPE FOR
EVERY USE!
PERFECT SEAL
even with pipe not
in alignment!

Standard & Double Extra Heavy UNIONS



Available with screwed or socket weld ends. 3000-lb. sizes $\frac{1}{8}$ " to 3"; 6000-lb. sizes $\frac{1}{8}$ " to 2".

ORIFICE UNIONS



With screwed or socket weld ends. 3000-lb. and 6000-lb. service.

MALE & FEMALE UNIONS



With steel-to-steel, bronze-to-steel, stainless steel-to-steel or orifice seats. 3000-lb. service only.

FULL STAINLESS & FULL ALLOY STEEL UNIONS



With screwed or socket weld ends. 3000-lb. and 8000-lb. service.

CATAWISSA Ends Guesswork
in Union Requirements!



write for
CATALOG 11
showing the
complete
Catawissa line

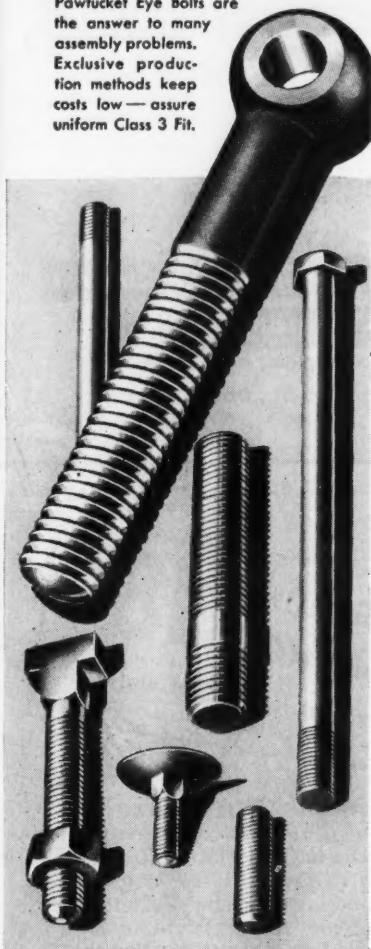
**CATAWISSA VALVE AND
FITTINGS COMPANY**
620 MILL ST. • CATAWISSA, PA.

When inquiring check CP 6184
on handy form, pgs. 2-3

CHEMICAL PROCESSING

Looking for specialties EYE BOLTS

Accurately made in sizes $\frac{1}{4}$ " and larger, or to your specifications, Pawtucket Eye Bolts are the answer to many assembly problems. Exclusive production methods keep costs low — assure uniform Class 3 Fit.



BETTER BOLTS SINCE 1882

Use Headed and Threaded Fasteners for Economy and Reliability

PAWTUCKET
"THE BOLT MAN"
MANUFACTURING COMPANY
327 Pine Street Pawtucket, R. I.
THE PLACE TO SOLVE YOUR BOLT PROBLEMS
T.M. REG.

When inquiring check CP 6185
on handy form, pgs. 2-3

AUGUST, 1951

PROCESSING EQUIPMENT

Adapts itself to changing sub-floor conditions without breaking and withstands vibration. Easily maintained as non-porous nature resists dirt accumulation. Wipes clean easily without vigorous scrubbing. Not affected by oils, greases, sweeping compounds or detergents.

Description: Smooth surface floor tile made from plastic and resin-impregnated cork, molded under heat and high pressure. Tygon plastic imparts chemical resistance and toughness with cork content contributing to resilience. Furnished in tile form in $8\frac{1}{2}$, 11, 17 and 34" square blocks, $\frac{1}{8}$ " thick. Eleven marbelized colors. Feature strip comes in 1, 2, and 3" widths, 34" long. Cove base, flexible top-set, 4" high x 48" long is available in 7 harmonizing colors. Cove base is made from solid Tygon plastic without cork content.

Source: Plascor plastic floor tile is made by Flooring Div., U. S. Stoneware Company, Dept. CP, Akron 9, Ohio . . . or for more information check CP 6186 on handy form, pages 2 and 3.

Self contained packing unit measures powders and seals into packets . . .

accurately fills up to 200 packets per minute from $1\frac{3}{4}$ x $1\frac{1}{2}$ " to 3 x 9" in size

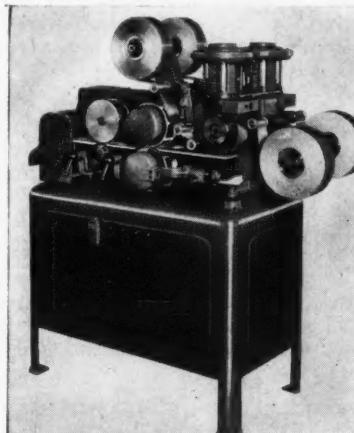
Uses: Accurately measures powders and seals them into packets.

Features: Can heat seal up to 200 per minute of packets made from cellophane, foil, paper, or fiberless cotton.

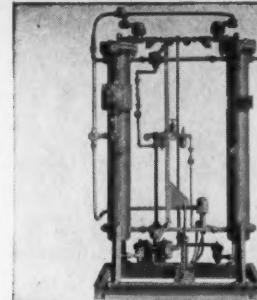
Description: Material to be packed in metered amounts is fed onto a continuous strip of cellophane or other envelope material. As this continuous strip unreels from the stock roll and along a flat bed, the powder is deposited on it in individual mounds by the metering hopper. Another continuous strip then covers the powder and the combined assembly enters a thermostatically controlled heat-sealing roll. After roll has sealed edges and separated the mounds by sealing laterally across the strip, a cutoff knife separates the individual envelopes. Packets may be from $1\frac{3}{4}$ to 3" wide, and from $1\frac{1}{2}$ to 9" in length.

After hoppers are filled and envelope stock properly threaded, operation is automatic. The Uni-Pak operates on 220 v, 60 cps single phase, being driven by a $\frac{1}{3}$ hp motor. Base is of welded steel construction with enameled finish. Floor space requirements are approximately 2 ft wide, by 4 ft long. The unit stands five feet high.

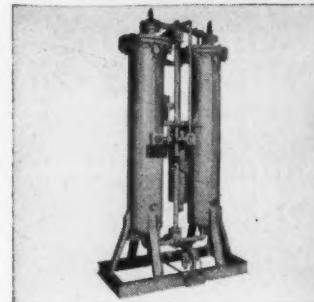
Source: Uni-Pak is a development of E. G. Staudt Div., The Sperry Corporation, Dept. CP, 2673 L University Ave., St. Paul 4, Minn. . . . or for more information check CP 6187 on handy form, pages 2 and 3.



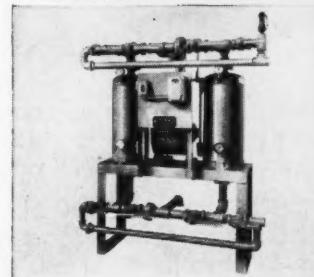
Unit produces up to 200 packets per minute



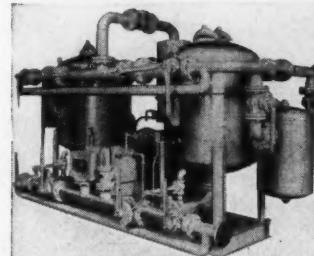
This Kemp Oriad Dryer is controlled by program timer. All operations, including tower reversals, fully automatic. Rated: 100 scfm, 100 psig, 70°F.



This Semi-automatic Kemp Oriad Dryer dries air for actuating tools, valves, etc. . . . dries process air and gases. Rated: 600 scfm, 100 psig, 70°F.



This Kemp Radiation-Cooled Dryer gives maximum efficiency with minimum maintenance and operating costs. Heating period terminates automatically. Rated: 300 scfm, 100 psig, 70°F.



This electrically activated Kemp Dryer is designed so gas stream is not contaminated by air normally used for reactivation. Rated: 3200 scfm, 100 psig, 70°F.

KEMP
OF BALTIMORE

DYNAMIC DRYERS
WRITE FOR Bulletin D-27 for technical information,
C. M. KEMP MFG. COMPANY,
405 E. Oliver St., Baltimore 2, Maryland.

When inquiring check CP 6188 on handy form, pgs. 2-3

Cuts Costs on Moisture Control!

Kemp Dynamic Dryers dry Air, CO₂, Ammonia, Gasoline, Nitrogen, Propane to low dew points for as little as $\frac{1}{4}$ c per mcf

If you think drying air, gases or liquids costs too much—find out how Kemp can save you money! Hundreds of Kemp Dynamic Dryers control moisture at low cost in plants all over the country. Operation is guaranteed to your specifications and the cost is surprisingly low. Many Kemp users report drying to sub-zero dew points for as little as $\frac{1}{4}$ c per mcf—including all charges for labor, capital investment and materials!

Flexible Design

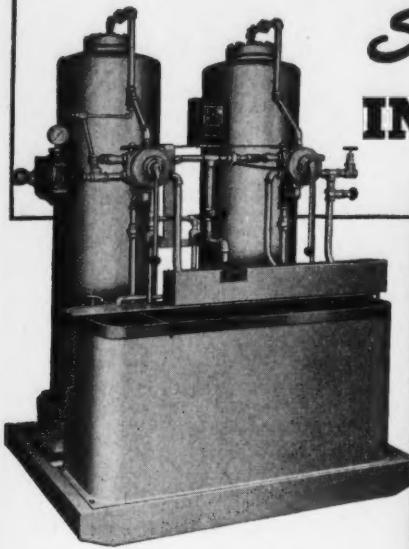
Kemp Dynamic Dryers are versatile—offer manual, semi-automatic or automatic operation. Desiccant is especially selected and compounded for the type drying your problem calls for. With Kemp you can dry air, gases, or liquids, control humidity in large or small areas, or eliminate moisture in materials. Gas, electric or steam regeneration is supplied as standard equipment.

Send for Information

Whether your moisture control problem is standard or special, you'll find Kemp has a Dynamic Dryer especially designed to solve it. Find out how Kemp engineering can be put to work for you to solve your problem . . . save you money. Write today and tell us your requirements. There's no obligation.

ion exchanger

Suggestions by INDUSTRIAL



A Two-Bed INDUSTRIAL Ion-Exchange Unit. Standard two- and four-bed units available with capacities of 200 to 1000 gph. Special units of any capacity engineered to requirements.

Demineralization of Water
Deacidification of Solutions
Purification of Organic Solutions
Recovery of Valuable Metals from Solutions
Concentration of Solutions
Substitutions of Anions and Cations in Solutions

The success stories of ion exchangers are not isolated cases. All through industry in a wide variety of applications they are effecting substantial cuts in costs, more uniform products, and a new ease in process control.

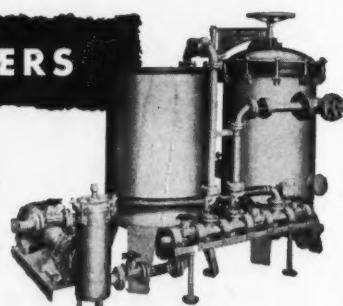
Here are a few suggestions for you to check against your own processing. INDUSTRIAL is glad to give you the benefit of its experience if you will outline your requirements. An estimate of probable savings, production, approximate costs, and the equipment required will enable you to know what the ion-exchange method can do for you.

INDUSTRIAL FILTERS

For Solution Clarification Any Solution—Any Quantity

A Typical INDUSTRIAL Stationary Filter. Standard portable and stationary models available with capacities of 100 to 15,000 gph. Special filtering systems are engineered to meet unusual requirements.

Write for full information and recommendations.



FILTERS PUMPS CORROSION TESTING APPARATUS
Pressure Type Centrifugal Salt Fog + Humidity
RUBBER DIVISION WATER DEMINERALIZERS
Vulcanized Linings • Molded Products

INDUSTRIAL FILTER & PUMP MFG. CO.

5908 Ogden Ave.
Chicago 12, Ill.

When inquiring check CP 6189 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Silent operation featured in motor . . .

resilient construction base cuts down inherent vibration

Uses: General purpose motors up to 5 hp.

Features: Resilient base isolates the vibration inherent in all single phase motors. This results in almost silent operation with a minimum of vibration transmitted to the driven machine.

Description: Tri-Clad motor is a single phase, capacitor motor. It is dynamically balanced for smooth operation. Cast iron frame is used and a built-in transfer switch is totally enclosed. Motors are available from $\frac{1}{2}$ to 5 hp and all except the 5 hp operate on either 115 or 230 v—the 5 hp using only the higher voltage.

Source: Manufactured by General Electric, Dept. CP, Schenectady 5, N. Y. . . or for more information, check CP 6190 on handy form, pages 2 and 3.

Repairs of safety goggles are faster and simpler with pliers . . .

special types available for riveting and rivet removal

Uses: For riveting and removing rivets for repairs involving the replacement of side shields on safety goggles.

Features: Pliers are so designed that inserting or removing goggle rivets can be accomplished without removing lenses and in just a few seconds.

Description: Knockout Plier (designated 169) has one pointed jaw for pushing out the rivet while the other jaw holds it rigid by squeezing from all sides. In this way the rivet can be pulled straight out without enlarging the hole or damaging the goggle frame.

Riveting Plier (170) is equally fast and easy to use. One jaw guides the rivet while the other blunt end flattens it to the goggle.

Neither of these pliers weigh more than 6 oz. They are built of special plated steel to withstand hard use, and designed to bring a good pressure to bear with very little effort of the hand. Since each is designed for a specific purpose, service and repair are speeded by their use.

Source: Available from American Optical Company, Dept. CP, Southbridge, Mass. . . or for more information check CP 6191 on handy form, pages 2 and 3.

Hundreds of firms like yours

CANDY	JAMS	MILK	RUBBER
CERAMICS	JELLIES	OILS	SPACE
CHEMICALS	KILNS	PAPER	HEATING
CORRUGATORS	LAUNDRIES	PLASTICS	TOBACCO
GRAIN DRYING	LINOLEUM	PLYWOOD	VEGETABLES
	MEATS	ROOFING	WALLBOARD

increase production • save fuel

CANDY: Cooks batches faster
MEAT: Shortened processing time
PRESERVES: Controlled steam
CANNER: 20% fuel saving
CHEMICALS: Speed increased 44%
MEAT: More steam—less fuel
PAPER: Faster operating speeds
MILK: 16% less fuel cost
RUBBER: 20% fuel saving
LAUNDRY: Speed increased 12%
CHEMICALS: Speed increased 44%
MEAT: More steam—less fuel

improve quality • save labor

with
COCHRANE



SYSTEM

of Condensate Drainage Control

Why not you?

write for 24-page fully illustrated bulletin

3162 N. 17th St., Phila. 32, Pa.

When inquiring check CP 6192 on handy form, pgs. 2-3

**1000 GALLONS
DEIONIZED WATER 18¢***
(equivalent to distilled water)
*Based on 10 grain water

Elgin MonoFlo Delonizer

Brings the cost of demineralized water within the range of those who have heretofore found evaporated or distilled water prohibitive in cost. Here is the perfect process water and feedwater.

The single column Elgin Delonizer produces water of higher quality than delivered by two and four-column demineralizers. In fact, for nearly all purposes, the water is freer from impurities than distilled water—and at a fraction of the cost. Naturally the compact Elgin MonoFlo Delonizer costs far less to buy and operate. It requires but little space—is simple in operation—cuts regeneration time and rinse water requirements—and has other notable Elgin features which makes it today's outstanding deionizing equipment.

Write today for complete data

ELGIN SOFTENER CORPORATION

180 N. Grove Avenue, Elgin, Illinois

WATER CONDITIONING FOR EVERY NEED

When inquiring check CP 6193 on handy form, pgs. 2-3

**Polyethylene coating stops
corrosion of conduit
by fumes . . .**

0.020" coating is permanently bonded to metal tubing

Uses: Coated conduit is recommended where corrosive fumes destroy or damage electrical conduit.

Features: Permanently bonded coating of polyethylene covers the conduit.

Description: "Electrunite E.M.T." is a standard size galvanized electrical conduit coated with extruded polyethylene 0.020" thick. The coating is permanently bonded so that the conduit may be bent and handled exactly as ordinary metal conduit. Connections are made by stripping a section of the end of the conduit and using standard connecting fittings. These connections are then taped with polyethylene or vinyl tape. Coated conduit, properly installed, is reported to stand up well under fume conditions and even under occasional splashings with some solvents and corrosives. It is not recommended where it will be wet with petroleum solvents.

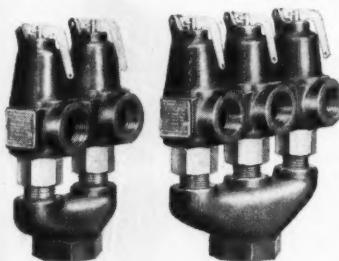
Source: Available from Steel and Tubes Div., Republic Steel Corporation, Dept. CP, 224 E. 131st St., Cleveland 8, Ohio . . . or for more information check CP 6194 on handy form, pages 2 and 3.

**No excessive discharge from
hot water boilers while
relieving pressure . . .**

achieved by assembly of two or three valves that open in progressive succession as pressure demands

Uses: Multiple-assembly safety relief valves for safeguarding large hot water boilers from excessive pressure conditions.

Features: Maker reports that an assembly of two or three smaller valves with small size orifices are preferable to larger orifice valves of equal capacity. This is because the smaller valves circumvent the objectionable excessive discharge which characterizes large-orifice relief valves when called upon to discharge a small amount of surplus water produced by expansion.



No. 233 No. 333
Multiple-assembly relief valves for
large hot water boilers

total discharge capacity of 496,700 Btu/hr, and No. 333 a three-valve assembly with capacity of 769,400 Btu/hr — ASME rating.

When the boiler pressure reaches 30 psi, only one valve opens, and opens only enough to take care of normal thermal expansion. If a 'runaway' firing condition occurs that causes steaming and an excessive pressure condition, two or three valves open in progressive succession to provide full-rated discharge capacity.

Source: Full details of relief valves are carried in Bulletin P-18, offered by McDonnell & Miller, Inc., Dept. CP, 3500 Spaulding Ave., Chicago 18, Ill. . . or for more information check CP 6195 on handy form, pages 2 and 3.

Don't Let Corrosion Strike

Protect
with

TYGON
the corrosion-resistant
plastic
PAINT

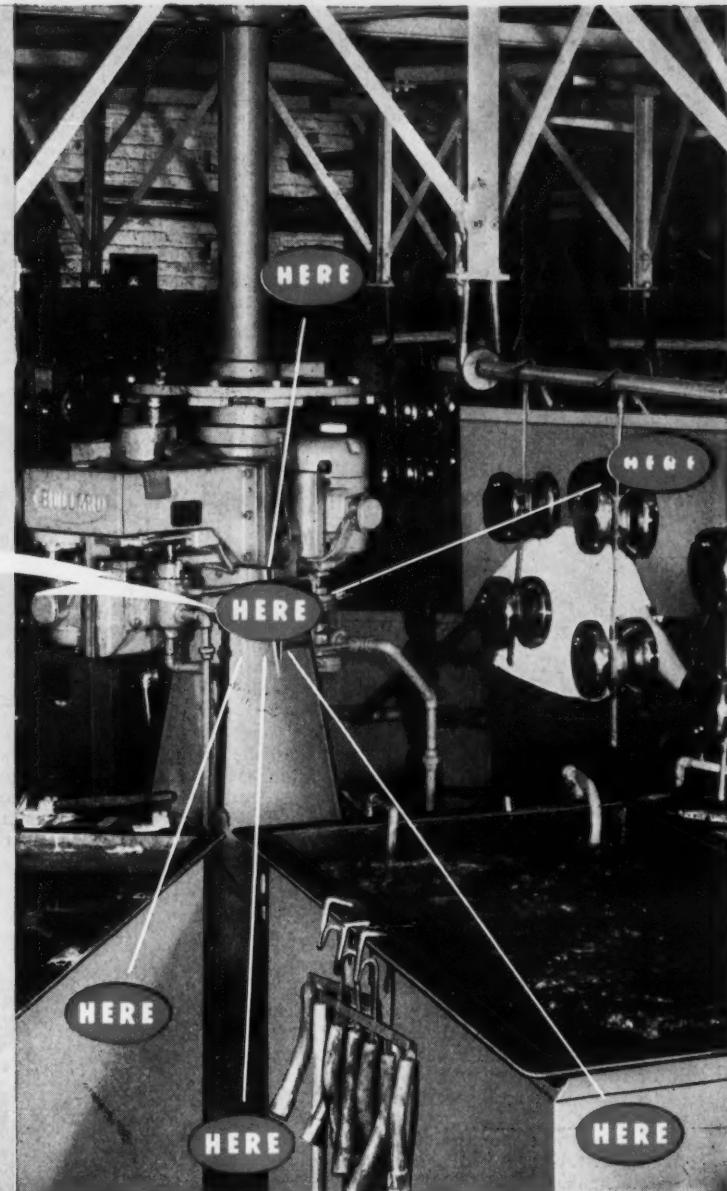


Write for this
helpful booklet

Today

Tells how and where you can use
Tygon Paint to keep your maintenance
costs down . . . plant equipment up.

U. S. STONEWARE, Akron 9, Ohio



The best way to stop corrosion is not to let it get a start.

Inspect, clean and *paint with Tygon*. This chemically resistant plastic paint can be applied by your own maintenance men to metal, concrete, brick and wood. Tygon Paint forms a tough, impact-resistant, impermeable plastic film that stands up sturdily under corrosives that quickly destroy ordinary paints. The use of Tygon Paint holds repaintings to a minimum. But don't expect Tygon Paint to last forever. It won't. *Inspect, clean, and touch-up with Tygon*. Watch gouges, scratches, worn spots. Patch breaks as they occur.

Timely preventative maintenance will extend the life of your plant and its equipment many years. The few extra pennies it costs are peanuts compared to what you save.

103C-1

When inquiring check CP 6196 on handy form, pgs. 2-3

**YOUR SAFETY VALVES
CAN BE**

BOOBY TRAPS

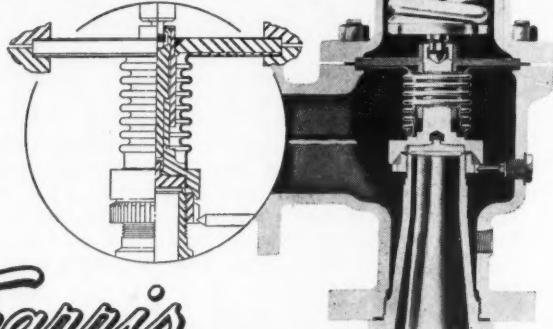
A safety valve that sticks is about as safe as a time bomb

Only BalanSeal® and FarriSeal® provide the positive protection at all times and under all operation conditions that makes them reliably safe.

Unique in design and principle, the BalanSeal Safety-Relief Valve has a protective bellows which is proportioned to eliminate any unbalanced downstream forces on the valve disc—which is perfectly balanced on its seat at the set pressure. Like its companion, the FarriSeal Valve, the guide, stem and spring are completely isolated from the lading fluid for perfect protection.

Pioneered by Farris Engineering Corp., BalanSeal, as thousands of installations are proving, is ideally suited for use wherever a collecting system is required for a series of safety-relief valves. It permits higher downstream pressure with consequent smaller piping—a feature which often permits savings in piping costs as high as 15 times the cost of the valves. The sole force opposing the opening of the valve is the spring. Static or surge downstream back pressure cannot affect the disc and has no effect on the relieving point.

You'll want to know more about the revolutionary safety-relief valve that can't stick under any circumstances. BalanSeal is described in detail in Bulletin No. 51B. Send for it today.



Patented
and
Patents
Pending

Farris

SAFETY and RELIEF VALVES

FARRIS ENGINEERING CORP.

406 Commercial Avenue

Palisades Park, N. J.

PROCESSING EQUIPMENT

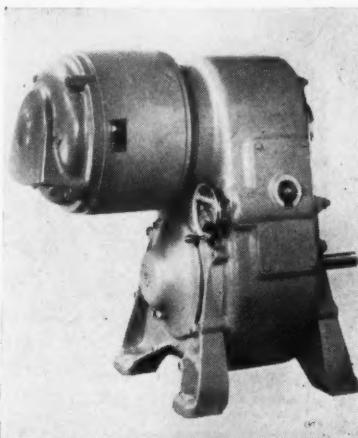
**Speed control incorporated
in 20 to 25 hp motor . . .**

construction permits use in moist or corrosive atmospheres

Uses: For variable speed drive of 20 to 25 hp equipment where corrosion problems exist.

Features: Motor housing and variable speed transmission case are made of gray iron castings which provide protection against corrosion from moist or corrosive atmospheres.

Description: Unit illustrated is the type KFE Speed-Trol which is drip-proof. Other units are available



Drip-proof variable speed motor

which are splash-proof and totally enclosed. All these can be supplied with manual, electric, or mechanical remote control of speed.

Source: Maker is Sterling Electric Motors, Inc., Dept. CP, 5401 Anaheim-Telegraph Road, Los Angeles, Calif. . . . or for more information check CP 6198 on handy form, pages 2 and 3.

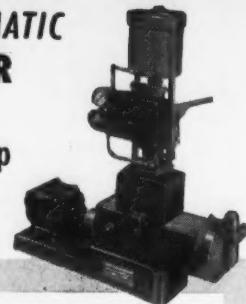
Aerating, filtering yields USP mercury

Folder covering mercury cleaning and purifying equipment explains a process of atomizing fouled mercury and allowing air to oxidize base metals. Metals are soluble in mercury, but the oxides are not. Unique decantation process using the selective wetting properties of mercury is then used to separate purified mercury from oxides, dust, moisture, acids, or other mechanically entrained substances. Mercury so prepared meets USP, ACS and ADA specifications.

"For Thorough Mercury Cleaning" is issued by Bethlehem Apparatus Company, Dept. CP, Hellertown, Pa. When inquiring specify CP 6199 on handy form, pages 2 and 3.

When inquiring check CP 6197 on handy form, pgs. 2-3

**Lapp AUTO-PNEUMATIC
PULSAFEEDER**
**piston-diaphragm
metering chemical pump
with automatic output
control**



Applicable to all pneumatic or electro-pneumatic instrumentation. Provides automatic metering in response to variable flow, pH, temperature, liquid levels, pressure, or other processing variables. Operates at constant speed—variable flow results only from variation in piston stroke length, controlled by pneumatic cylinder. Pumping head isolates chemical being pumped.

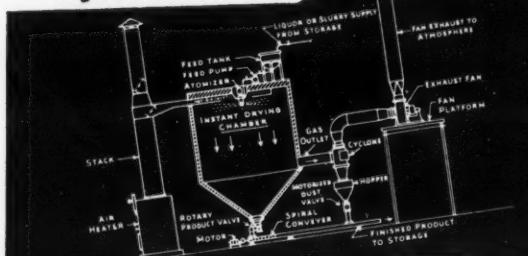
WRITE for complete description and specifications. Lapp Insulator Co., Inc., Process Equipment Division, 457 Maple St., LeRoy, N. Y.

Lapp

PROCESS EQUIPMENT
CHEMICAL PORCELAIN VALVES • PIPE • RASCHIG RINGS
PULSAFEEDER • CHEMICAL PROPORTIONING PUMPS

When inquiring check CP 6200 on handy form, pgs. 2-3

**LIQUID TO
POWDER
IN A SPLIT SECOND!**



FOR

**CHEMICALS
FOOD PRODUCTS
SOAP POWDERS
CLAYS & CLAY SLIPS
PLASTICS
BY-PRODUCTS
WASTES**

Instant Drying System Units are operating commercially on the drying of these materials. A large manufacturer of wall tile says their Instant Drying equipment "has produced . . . greater quantity . . . better quality . . . an economy of labor and an ultimate over-all cost reduction for the finished product."

LOW COST PRODUCTION DRYING

Write us about your drying problem. Arrange with us for test runs on your material at our Poughkeepsie plant.

INSTANT DRYING CORPORATION

101 Park Avenue, New York 17, N.Y.

Engineering by CLARK, MACMULLEN & RILEY, INC., N.Y.



Testing & Research
Laboratories of
Poughkeepsie, N. Y.

When inquiring check CP 6201 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

**Size, shape no problem
in testing vessels
for leaks . . .**

leaks, pinhole-size and up, located by fluorescence under ultraviolet light



Uses: Lamp can be used for detecting leaks in vessels of any size, for examining substances under ultraviolet, or for tracing flow of fluorescing agents.

Features: Lamp is battery powered, eliminating hazards of electric shock under wet conditions. It can be safely used in testing tanks holding dilute solutions of fluorescing agents. Leakage points glow brightly.

Description: Raymaster Model TFS4-B90 is made up of two units. Battery unit is 4-1/4 x 5-1/4 x 8 inches and weighs 11 lb complete with battery. Lamp unit has 3-1/4 x 6-1/2 inch opening and is 1-3/4 inches deep. Unit, including type TF4 tubular lamp, weighs only 1 lb.

Source: Product of George W. Gates & Co., Inc., Dept. CP, Hempstead Turnpike & Lucille Ave., Franklin Sq., L.I., N.Y. . . . or for more information check CP 6202 on handy form, pages 2 and 3.

Resistance to hydraulic fluids found in gaskets made from fabric, neoprene compound . . .

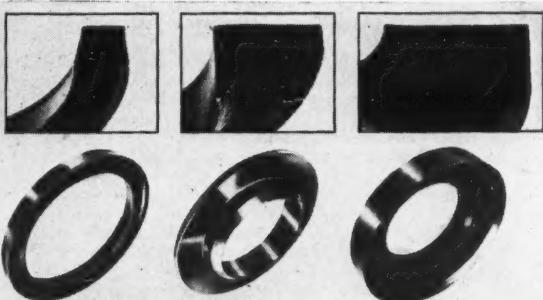
available designs include cup, flange, "O" ring, and "U" ring in standard sizes

Uses: For hydraulic and pneumatic applications.

Features: Packings are compression molded from special fabric and neoprene compound that has unusual wear qualities and resistance to a wide variety of hydraulic fluids.

Description: These packings are compression molded under heat and high pressure and are held to precision limits. For this reason, they are particularly suitable for service in hydraulic and pneumatic cylinders, pumps, valves; also as static seals or in traverse action applications.

Designs available include cup, flange, "U" ring and "O"



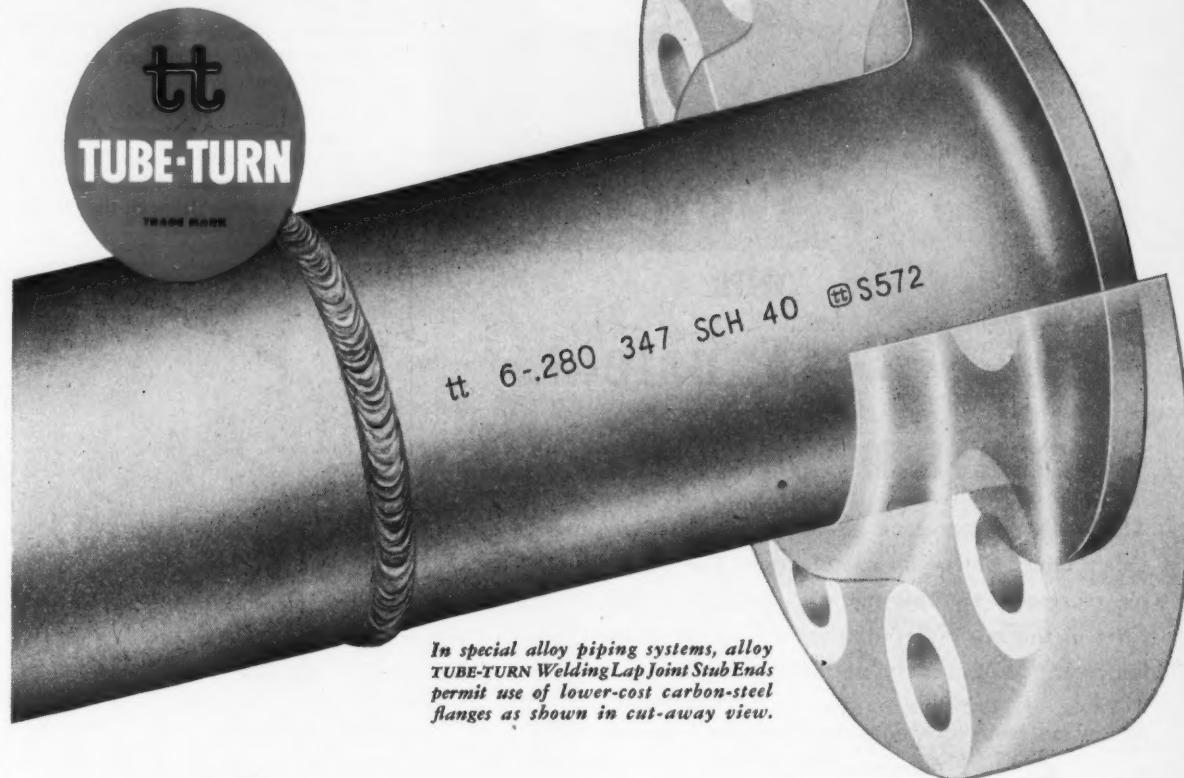
Packings molded from fabric and neoprene compound

ring. In addition to standard sizes, facilities are available for molding sizes not stocked.

Source: Precision packings are made by Periflex Inc., Dept. CP, Hazel Park, Mich. . . . or for more information check CP 6203 on handy form, pages 2 and 3.

Remember -

the trade marks "tt" and "TUBE-TURN" are applicable only to products of TUBE TURNS, INC.



Special alloys lick special piping problems

YOU can overcome special problems of corrosion, fluid contamination, pressure, or temperature by selecting pipe and welding fittings of special materials.

Tube Turns, Inc. continually studies the proper application of different materials to piping systems. The complete line of TUBE-TURN Welding Fittings is available in more than forty different alloys. Today's piping engineer can choose from intermediate and high alloy steels containing chromium, nickel, or both; commercially pure nickel, copper, and aluminum; and alloys of these.

Get in touch with your nearby Tube Turns' Distributor. You'll find one in every principal city.

"Be sure you see the double tt"

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DISTRICT OFFICES: New York • Philadelphia • Pittsburgh • Chicago • Houston • Tulsa • San Francisco • Los Angeles
TUBE TURNS OF CANADA LIMITED, CHATHAM, ONTARIO . . . A wholly owned subsidiary of TUBE TURNS, INC.

Write Dept. KK-9 for free booklet "Pipe

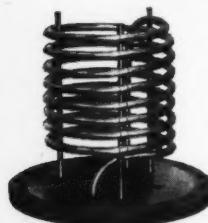
When inquiring check CP 6204 on handy form, pgs. 2-3





Protect It with Fansteel Tantalum Equipment!

The whole pie represents the selling price of the merchantable product which you manufacture. The big portion of the pie represents the raw material costs, plus your processing costs of the raw material. The little piece of the pie is the important one . . . it's your profit!



Tantalum steam coil for rapid heating of contents of agitated kettle.

USE TANTALUM WITH ECONOMY for most acid solutions, corrosive gasses or vapors; not with HF, alkalis or substances containing free SO₃.

Write for informative bulletins on Tantalum Acid-Proof Equipment.

As raw material costs continue to increase, it is often difficult to increase selling prices in proportion. This, of course, results in a smaller operating margin. And if this material, for which you pay more, is subject to corrosive attack, there is the problem of spoilage through contamination from corroded processing equipment. This makes the going really tough.

When considering all this, you will come to realize that the small additional investment you make in acid-proof tantalum equipment is a worth-while expenditure. Consult with Fansteel engineers on the possibility of using tantalum equipment in your operations. Fansteel Metallurgical Corporation, North Chicago, Ill., U.S.A.

Fansteel

Acid-Proof
TANTALUM
CHEMICAL PLANT EQUIPMENT

12404-C

When inquiring check CP 6205 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Fixed nozzle delivers fog instead of spray . . .

greater extinguishing power is furnished over a wide area

Uses: For fixed installation near ceilings as fire protection.

Features: Nozzle disperses a wide umbrella of fog, rather than the spray of conventional types.

Description: Rockwood T-Head type is a medium velocity discharge fixture and is recommended for automatic as well as open deluge use in a pendant position. Although the output



Fog-type head covers wide area in extinguishing fires

is fog, the unit uses the same 'figure 4' fusible element as manufacturer's spray models. Wide angle discharge protects ceiling without wetting it and covers entire floor area under the umbrella with fog.

Source: Manufactured by Rockwood Sprinkler Company, Dept. CP, 38 Harlow Street, Worcester 5, Mass. . . or for more information check CP 6206 on handy form, pages 2 and 3.

Ball-bearing joints work at 3000 psi

Two-color, eighteen-page catalog and supplements cover ball-bearing swivel joints for working pressures up to 3000 psi. Catalog 50-D covers general features and specifications of all joints and their components. Separate four-page bulletin deals with dimension data and specifications of the joints. Another four-page bulletin is devoted to packings specifically designed for these units. Issued by Chiksan Company, Dept. CP, Brea, Calif. When inquiring specify CP 6207 on handy form, pages 2 and 3.

CHARLOTTE

COLLOID MILLS

Control Product Improve Production

- CLAY
- OIL
- INK

PHARMACEUTICALS •
RUBBER •
PAINT •
PAPER •
RAYON •
ASPHALT •



- WAX
- POLISHES
- FOOD PRODUCTS

COSMETICS •

Write for Descriptive Literature

CHEMICOLLOID LABS INC.

Manufacturer and Distributor

30 CHURCH ST., NEW YORK 7, N. Y.

DISTRICT OFFICES

Baltimore • Chicago • Detroit • Los Angeles • Atlanta • New Orleans

When inquiring check CP 6208 on handy form, pgs. 2-3



STACon TEMPERATURE REGULATOR*

*Patented

You can install a Farris Stacon Temperature Regulator and forget all about it. You know it will operate positively and accurately under all conditions and at all times.

The Farris Stacon Temperature Regulator is dirt-proof, trouble-free. It operates with unheard of accuracy—to within plus or minus 1 deg. And that's not just under ideal circumstances. It functions with identical accuracy in the worst possible surroundings—provides air-operated sensitivity at self-operated cost.

Here's why: In patented Stacon Regulators, there are no packing glands to leak or bind. The liquid in the bulb flashes to vapor in the power bellows, providing hair-trigger response to move the valve disc.

You'll want complete details on this accurate and economical temperature regulator. Write for Stacon Bulletin 50-100.

Farris Stacon Corporation

406 COMMERCIAL AVE.

PALISADES PARK, N. J.

When inquiring check CP 6209 on handy form, pgs. 2-3

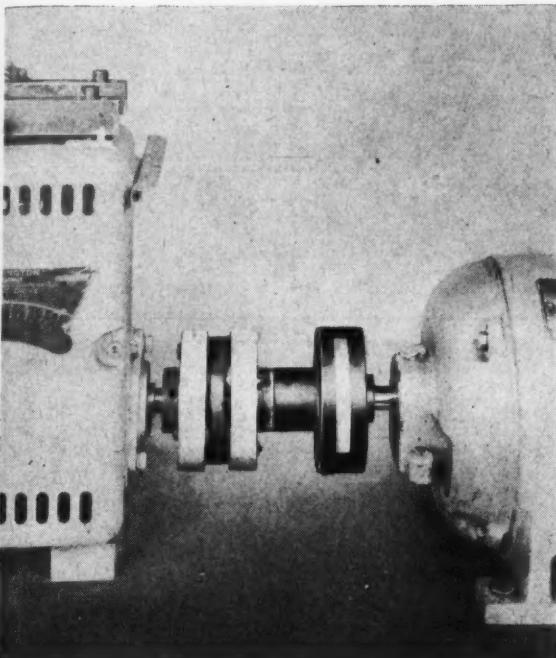
Cushioned starting, reduced current and overload protection without sacrificing power transmission . . .

mercury clutch delivers full power at rated speed, less or none below rated speed

Uses: In starting equipment powered by heavy electric motors or internal combustion engines where high starting torque requirements would draw excessive current, or, in the latter case, stall the engine. Clutch accelerates high inertia loads gradually while the power plant operates at its most efficient speed.

Features: While this clutch provides cushioned starts and low drain on prime mover, it gives 100% power transmission at or above the speed at which it is rated.

Description: The Mercury Clutch uses liquid mercury as the centrifugal member of a modified centrifugal clutch. Friction rings are forced to grip from driving to driven shafts when the driving shaft reaches rated speed. At this



Mercury clutch and flexible coupling used on integral hp motors to 15 hp

speed, the centrifugal force of the mercury is sufficient to maintain complete transmission with no slip. Series "E" clutches are designed for use on integral horsepower motors up to 15 hp. Used in conjunction with a flexible coupling, this unit can operate even when there is a slight misalignment between the motor and load.

Source: Maker is Automatic Steel Products Inc., Dept. CP, Canton 6, Ohio . . . or for more information, check CP 6210 on handy form, pages 2 and 3.

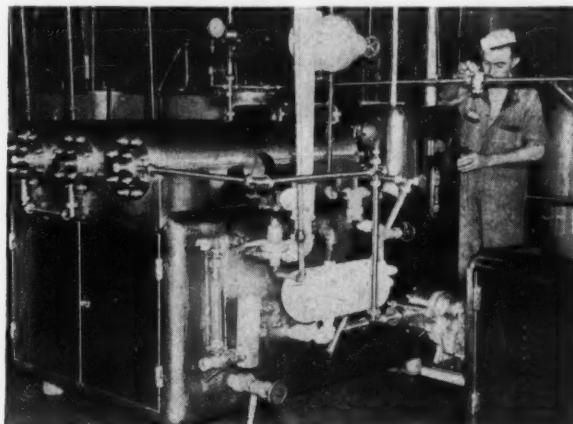
Reports on heavy equipment

Eighteen-page illustrated report deals with heavy industrial equipment fabricated to specifications. Standard units of steam generators, boiler feed water systems, tubular conveyors for metal chips, chemicals and other materials as well as several items built to order are shown and described. Report HF 118 is issued on letterhead request to Hapman-Dutton Company, Dept. CP, Kalamazoo, Mich.



PROCESS NEWS

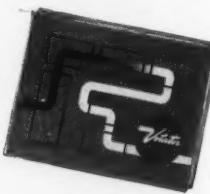
- CRYSTALLIZING . . . CONTINUOUS PROCESSING
- HEATING OR COOLING
- CONTROLLING HEAT OF REACTION



Edible oil products are emulsified, crystallized, and tempered in this installation. In addition, VOTATOR Heat Transfer Apparatus can be used in crystallizing such materials as paraffin wax, paradichlorobenzene, paranitrochlorobenzene, anthracene, naphthalene, acetic anhydride, potassium perchlorate, sodium chloride, microcrystalline wax, fatty acids, and in the winterizing of linseed oil.

GET THIS FREE BOOK TODAY!

This 32-page book gives you the complete story of VOTATOR Processing Apparatus. Describes the processing of an amazing variety of food and industrial products. Contains 12-page technical section with valuable reference data and charts. Write for free copy today. The Girdler Corporation, Votator Division, Louisville 1, Ky.



VOTATOR Heat Transfer Apparatus provides rapid and uniform crystallization of organic or inorganic viscous materials. Labor savings are substantial, since less handling is required, and the continuous processing operation is completed in a matter of seconds.

In a typical installation, four VOTATOR Heat Transfer Units deliver a continuous flow of paraffin wax at the rate of more than 40,000 pounds per eight-hour shift, at the critical temperature of 116°F. These units double the volume formerly achieved, with only half the manpower.

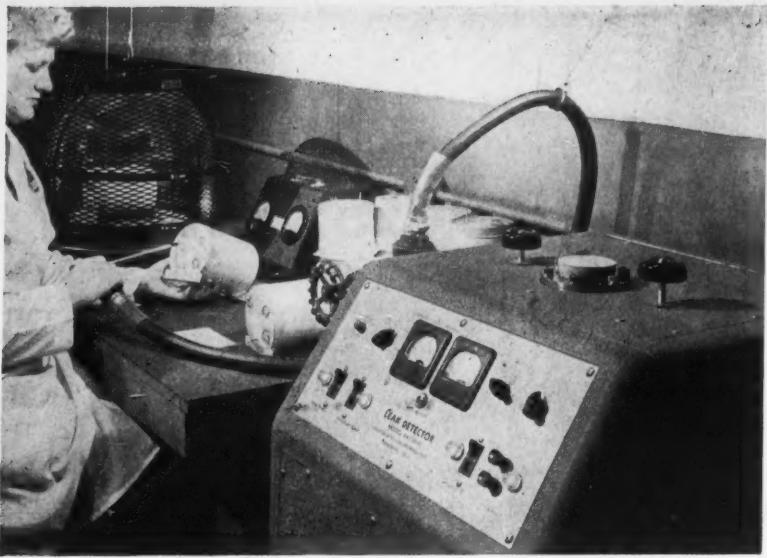
With VOTATOR Heat Transfer Apparatus, only a small quantity of material is processed at any one time, at high speed. Thus processing is accomplished quickly and efficiently. Close control in a closed system assures complete uniformity of product, prevents contamination.

In addition to crystallization, VOTATOR Heat Transfer Apparatus can be used for heating or cooling and controlling heat of reaction. Girdler's complete service covers process engineering and design, manufacture of equipment, and installation.

VOTATOR—T.M. Reg. U.S. Pat. Off.

THE **GIRDLER** CORPORATION
Votator Division

When inquiring check CP 6211 on handy form, pgs. 2-3



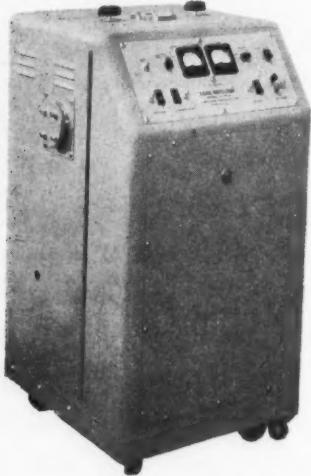
(Photo courtesy Lear, Incorporated, Grand Rapids, Mich.)

SUPER SNIFFER

checks hermetic sealing of instruments

CONSOLIDATED ENGINEERING CORPORATION's Leak Detector shows the existence or absence of any leak, the rate of leakage, and the exact location. Its almost unbelievable sensitivity will actually detect leakage at the rate of 1 c.c. in 31 years.

Above we see a corner of Lear, Incorporated's immaculate instrument



Furnished as a complete, compact unit mounted on rubber casters. Standard equipment includes both visual and audible indicators.

designed,
manufactured and
sold by

CONSOLIDATED ENGINEERING
Corporation

Analytical Instruments  for Science and Industry
300 N. Sierra Madre Villa Pasadena 8, California

When inquiring check CP 6212 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Pumps liquids, pastes into all types of containers . . .

foot-operated piston pump dispenses up to 16 oz

Uses: Filling various containers with liquids, semi-liquids, creams and pastes.

Features: Dispenses up to 16 oz per stroke regardless of whether bottles, cans, tubes, jars, or other containers are being filled.

Description: Piston filler is foot operated and acts on the vertical piston principle. Stroke is actuated by foot treadle. Filler is equipped



Foot pump fills bottles, tubes, jars, etc.

with a five gallon hopper made of stainless steel or nickel silver. Unit can be easily moved even though it is mounted on a steel table.

Source: Development of The Filter Paper Company, Dept. CP, 2426 S. Michigan Ave., Chicago 16, Ill. . . or for more information check CP 6213 on handy form, pages 2 and 3.

Heavy duty coupling

Four-page bulletin illustrates and describes heavy duty wedge-lock coupling for pipe 8 to 30 inches diameter. Bulletin 513 is issued by Naylor Pipe Company, Dept. CP, 1230 E. 92nd St., Chicago 19, Ill. When inquiring specify CP 6214 on handy form, pages 2 and 3.

Easy Way

to Clean

Rubber or Plastic Molds

LOOKING for a practical way to clean molds without burning or hand scraping—and IN A FRACTION OF THE USUAL TIME? Then try this scientific Oakite way: Oakite alkaline or acid detergents, used as recommended, quickly remove baked-on carbonized deposits, stains and discolorations—without attacking steel, without etching, pitting, or discoloring aluminum. Oakite's versatile cleaning methods—alkaline soak, reverse-current, or steam-detergent—do the job easily, safely—AT LOW COST.

FREE details on request. Write Oakite Products, Inc., 18F Thames St., New York 6, N. Y. No obligation.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
TRADE MARK REG. U. S. PAT. OFF.

Technical Service Representatives in Principal Cities of U. S. & Canada

When inquiring check CP 6215 on handy form, pgs. 2-3

**UNEQUALED IN
FILTERING CHEMICALS**
for—HIGH FLOW RATES
LESS DOWN TIME
POSITIVE CAKE STABILITY
QUALITY, SPEED AND ECONOMY

SPARKLER FILTERS

Available in

stainless steel
mild steel
rubber lined
monel, nickel
bronze, Hastelloy
steam or brine
jacketed



Write Mr. Eric
Anderson for personal service
on your engineering problems.

SPARKLER MFG. COMPANY, Mundelein, Illinois

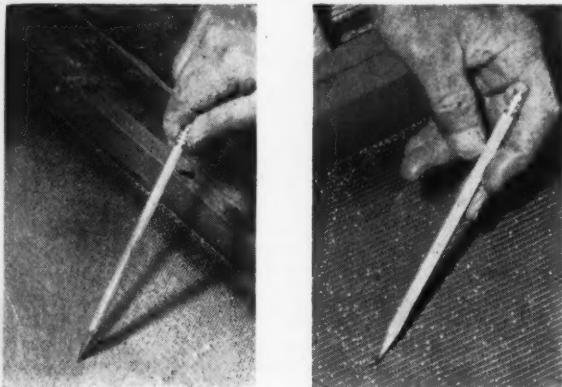
When inquiring check CP 6216 on handy form, pgs. 2-3

Electrically reducing moisture of clay, as it is screened, eliminates "blinding" . . .

low voltage current, delivered to screens of No. 2 mesh or smaller, increases capacity 50%

Uses: Originally developed to facilitate screening of moist clay, used in brick and tile manufacture, it has applications in speeding up screening of sand, coal, lime, ores, chemicals, and other materials which contain moisture and are not readily flammable, or explosive, and are not conductors.

Features: Operates economically on either new or old gravity or vibrating screens. Screen, acting as resistance to flow of the low voltage current, is heated just enough to



Views show how electric heater eliminates clogging in screening of moist clay

reduce the moisture content of the material as it passes over the mesh. As a result, the material passes more readily through the mesh and "blinding" is eliminated.

Description: Heater embodies a specially designed step down transformer which converts 220, 440 or 550 volt alternating current to low-voltage heating current. Low-voltage current is then delivered through high-amperage cables to special bus bars which extend the full length of the screen on each side. Depending on the nature of and moisture of the material being screened, screen capacity is increased as much as 50%, and beating to keep screen open is not required. This saves labor and contributes to longer screen life.

Installation can be made by plant electrician. Voltage and temperature developed present no hazards from fire and electric shock.

Source: Electric screen heaters are made by F. R. Hanlon & Sons, Dept. CP, 1608 Waynesburg Road S. E., Canton, Ohio . . . or for more information check CP 6217 on handy form, pages 2 and 3.

Versatile continuous dryer has gentle action

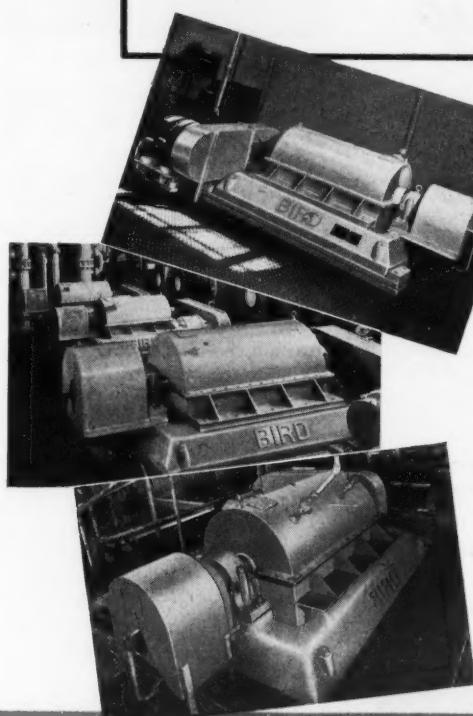
Six-page bulletin shows basic unit used for drying, sublimation, oxidation, and cooling. Unit may be used with fragile or heat sensitive materials, as well as corrosive, abrasive, or caking types. Text, illustrations, and diagrams cover operating principle of repeated piling and spreading for gentle handling of materials, as well as design features, adaptability, construction, and applications. Bulletin 1506 is issued by Wyssmont Co., Dept. CP, 31-04 MM Northern Blvd., Long Island City 1, N. Y. When inquiring specify CP 6218 on handy form, pages 2 and 3.

CONTINUOUS PEAK PRODUCTION of Materials Such As These:

Coal, bituminous & anthracite
Aluminum Hydrate
Ammonium Alum
Ammonium Chloride
Ammonium Nitrate
Ammonium Sulphate
Aniline Sludge
Barium Carbonate
Barium Chloride
Barium Sulphate
Beryllium Sulphate
Black Ash
Borax
Calcium Carbonate
Carnallite
Chromium Oxide
Copper Sulphate
Copperas
Cryolite
Di-Sodium Phosphate
Ethyl Cellulose
Fish Meal
Flotation Concentrates
Flotation Tails
Foundry Sands
Gland Extracts
Glaubers Salt
Glutamic Acid
Hexachlorethane
Hexamine
Iron Ore

Iron Oxide
Langbeinite
Lead Arsenate
Lead Chromate
Lime
Lime Mud
Lithopone
Manganese Ore
Nickel Salts
Packing House Waste
Phenol
Phosphate (High Grade Residue)
Potassium Carbonate
Potassium Chloride
Potassium Hydroxide
Potassium Nitrate
Potassium Sulphate
Potato Starch
Sodium Bichromate
Sodium Carbonate
Sodium Chloride
Sodium Fluoride
Sodium Hydroxide
Sodium Nitrate
Sodium Stannate
Sodium Sulphate
Sodium Sulphite
Sodium Thiosulphate
Solvent Extractions
Starches
Sulfur
Synthetic Resins
Tallow
Tartaric Acid
Tin Ore
Titanium Dioxide
Tri-Sodium Phosphate
Tungsten Salts
Ultramarine Pigment
White Lead
Zinc Chromate
Zinc Oxide
Zinc Sulphide

Calls for BIRD CENTRIFUGAL FILTERS



Specific information on filtering efficiency, production and cost per ton is either already available or readily obtainable from pilot scale test runs of your filter feeds at the Bird Research and Development Center.

BIRD MACHINE COMPANY
SOUTH WALPOLE • MASSACHUSETTS

When inquiring check CP 6219 on handy form, pgs. 2-3



Careful Craftsmanship

for Smooth Performance



CHEMICAL PROCESS EQUIPMENT

Expanding tubes into the tube sheet is a relatively minor operation in the big job of building smooth functioning and durable GB Chemical Process Equipment from the blueprint to the finished stage. But even though it's just a small part of the overall construction job, it's IMPORTANT at GB. From long experience we know that *careful craftsmanship* must be the watchword of *every* construction operation to maintain those standards of performance for which GB equipment is so widely known. Our experienced engineers are at your service any time to discuss your requirements without costs or obligation.

GOSLIN-BIRMINGHAM MANUFACTURING CO., INC.

BIRMINGHAM, ALABAMA

CHICAGO: F. M. deBeers and Associates, 20 N. Wacker

When inquiring check CP 6220 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Weight of stock clerk anchors ladder safely to floor . . .

casters retract automatically as legs contact floor firmly

Uses: Especially designed for use with stock carts.

Features: Hangers are adjustable for push bar heights from 30 to 38". Ladder is mounted on ball bearing casters. These retract when stock



Safety stock cart ladder

worker steps on ladder, putting two rubber tipped legs into firm contact with floor.

Description: Ladders are all steel with $\frac{3}{4}$ " steel tubing frames and expanded steel non-slip steps, welded for maximum strength.

Source: Stock cart ladders are built by Ballymore Co., Dept. CP, Wayne, Pa. . . . or for more information check CP 6221 on handy form, pages 2 and 3.

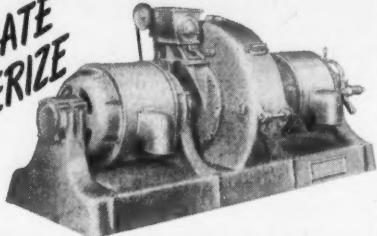
Fatigue tests made on vibrating table

Six-page folder illustrates, describes, and specifies series of vibrating tables capable of handling loads from 10 to 100 lb. Each model is designed for either vertical or horizontal movement of sufficient amplitude to produce a maximum acceleration of ten times gravity.

Frequency is adjustable from 10 to 55 cps automatically and up to 60 cps manually. Units find use in fatigue and other tests on instruments, castings, electrical parts, etc. "Vibration Fatigue Test Equipment" is issued by All American Tool & Mfg. Co., Dept. CP, 1014 Fullerton Ave., Chicago 14, Ill. When inquiring specify CP 6222 on handy form, pages 2 and 3.

What have you

to GRANULATE
or PULVERIZE
?



Virtually all kinds of reducible materials are being ground, granulated, cracked, shredded, fluffed, or comminuted in Bauer double-revolving-disc attrition mills. The materials include chemicals, grain, wood, seeds, feathers, metals, and many others.

In numerous cases, our engineers have worked out the practical techniques for special processing operations. An essential part of our service is making test runs with commercial sized mills in our research laboratories.

If you have a unique processing problem, we'll try to solve it for you. Perhaps we can cite an existing operation similar to yours in which Bauer Attrition Mills are giving most satisfactory results.

General information on the subject is contained in our Bulletin A-5. Ask for a copy.

THE BAUER BROS. CO. • 1728 Sheridan Ave.
Springfield, Ohio

Established 1878

When inquiring check CP 6223 on handy form, pgs. 2-3

MEN SCARCE?

2

BIN-DICATORS
OFTEN RELEASE
ONE MAN
FOR OTHER WORK



**BIN-FLO
AERATOR
UNITS
KEEP
BULK
MATERIALS
MOVING**

BIN-DICATORS indicate level of materials in bins, silos, hoppers, chutes, etc., and report overfeed, choking, underfeed, almost full, almost empty, etc., to central control point by visible or audible signals. Also automatically control operation of machinery as indicated by any of above conditions.

Always on the job—and doing it. Low first cost; negligible operating cost. Used on over 100 materials. Fully guaranteed. Write for free book.

BIN-FLO Aerator Units in bins, hoppers, chutes use low pressure air to keep materials moving at points of restricted flow.

**NEW
20 PAGE
BOOK
FREE**

THE BIN-DICATOR CO.
13946-D Kercheval • Detroit 15, Mich.

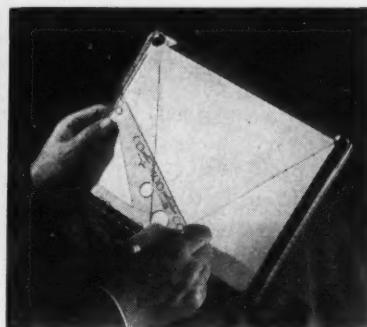
When inquiring check CP 6224 on handy form, pgs. 2-3

Clamps replace thumb tacks on lightweight, plastic drawing board . . .

75% lighter in weight than conventional boards

Uses: Drawing board is 9 3/4 x 12 1/4" and takes 8 1/2 x 11" paper.

Features: Four recessed corner clamps attach paper to board, eliminating thumb tack holes that interfere with drawing. Bakelite styrene plastic reduces board's weight as much as 75% in comparison with conventional boards.



Thumb-tack-less drawing board

triangles can be moved over all four edges of the paper. Triangles (30-60 and 45) are stored by clamping into recesses underneath the board. The board can be carried in a conventional brief case due to its compactness.

Source: Product of A. Partrick Company, Dept. CP, 9 Grove St., Westwood, N. J. . . or for more information check CP 6225 on handy form, pages 2 and 3.

Tank, agitator, pump joined in one unit for precise chemical feeding . . .

designed for pressures up to 1,000 lb and capacities up to 15 gph

Uses: Designed primarily for boiler feed water treatment and also adaptable to various services such as automatic timing, flow metering.

Features: Tank, agitator and pump are unified in a smooth-working team. Chevron-type packing contributes to accuracy and economy. Stainless steel valves are double-discharge, double-suction, precision ground and accurately spring-loaded to maintain specific capacity.

Description: Designed for pressures up to 1,000 lb and capacities up to 15 gph.

Source: Chemical Apportioning Pump is a development of Neptune Pump Manufacturing Company, Dept. CP, 4912 North Sixth St., Philadelphia 20, Pa. . . or for more information check CP 6226 on handy form, pages 2 and 3.



15 gph feeder unit

NEED FOR NEW BOILER ELIMINATED after installing Armstrong traps on canning equipment . . . *Bestovall Canning Co., Vancouver, B. C.*

50% DECREASE IN HEAT-UP TIME of plating coils . . . *Proctor Electric Co., Philadelphia, Pa.*

15% GREATER PRODUCTION since unit trapping with Armstrongs . . . *Sun Ray Cleaners, Chicago, Ill.*

NO REPAIRS IN SIX YEARS ON 250 Armstrong traps . . . *Plymouth Shoe Co., Middleboro, Mass.*

20% FUEL SAVINGS after trapping heating coils individually . . . *Norton Greenhouses, St. Paul, Minn.*

SAVING 14 TONS COAL PER MONTH with Armstrong traps . . . *M. Wile & Company, Buffalo, N.Y.*

30% LESS MAINTENANCE on traps on low pressure heating system . . . *John Deere Harvester Works, East Moline, Ill.*

BETTER QUALITY WORK since trapping laundry equipment with Armstrongs . . . *Soft Water Laundry & Cleaners, Long Beach, Cal.*

40° HIGHER TEMPERATURES in flatwork ironer rolls . . . *Peter Bent Brigham Hospital, Boston, Mass.*

40 MINUTES FASTER HEAT-UP in drying oven since Armstrong traps were installed . . . *Emerson Drug Co., Baltimore, Md.*

DRIER HEAT-UP TIME CUT 2-3 HOURS with six Armstrong traps . . . *Industrial Grain Products, Fort Williams, Ontario.*

SAVES 3728 GALLONS FUEL OIL first year Armstrong traps were installed . . . *Mary Lincoln Candies, Buffalo, New York.*

**THE EVIDENCE
IS OVERWHELMING!**

**ARMSTRONG TRAPS
GIVE UNEQUALLED RESULTS**



YOU CAN confidently expect results like those listed at the left when you install Armstrong steam traps because:

- No steam loss, hence steam and fuel savings and less return line back pressure.
- Air is vented automatically along with condensate, assuring maximum temperature, less corrosion.
- Valve and seat are chrome steel, hardened, ground and lapped—good for temperatures to 900° F, 950 psig, they last for a long, long time at lower pressures.
- Valve lever assembly and bucket are 18-8 stainless for long wear and corrosion resistance.
- Nothing to stick, clog, leak or collapse.
- Dirt is washed right through by swirling action of the condensate.
- There is almost no friction between moving parts.
- The valve is either wide open or tight closed—no wire-drawing, no dribbling, less wear.
- Condensate is discharged at steam temperature, keeping units at top temperature.

Why have less? Order your Armstrong traps now.

ARMSTRONG MACHINE WORKS
880 Maple Street • Three Rivers, Michigan

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CATALOG
IN SWEETS
OR CEC



SEND FOR THE 36-PAGE STEAM TRAP
BOOK FOR COMPLETE DETAILS

ARMSTRONG STEAM TRAPS

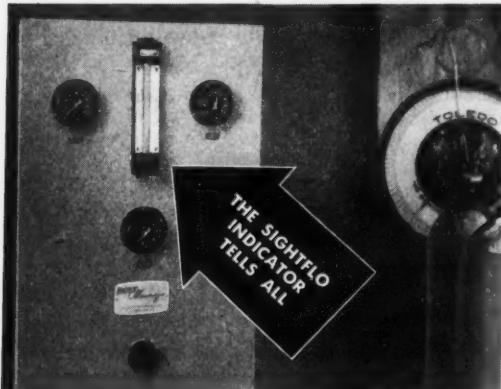
When inquiring check CP 6227 on handy form, pgs. 2-3

There's no room in
the modern plant for . . .



HOKUS-POKUS Chlorination!

You don't have to do any crystal ball gazing when you use BUILDERS Visible Flow CHLORINIZERS. These modern chlorine gas feeders show you what's happening "plain as the nose on your face". If there's a flow of chlorine gas, the Sightflo indicator says so; if there's no flow it says *no!* This positive flow rate indicator shows the amount of feed, too — accurate within $\pm 4\%$. Here's but one of many reasons why hundreds and hundreds of users endorse Builders Chlorinizers.



BUILDERS Visible Flow CHLORINIZER
Model DVX at Brewer, Maine

Available in three volumetric models — for
any chlorination service:

Up to 400 lbs./day . . . Model DVX . . . Bulletin 840-F2A
Up to 2000 lbs./day . . . Model CVS . . . Bulletin 840-F1
Up to 6000 lbs./day . . . Model HCVS . . . Bulletin 840-G27

For Bulletins, address Builders-Providence, Inc. (Division of Builders Iron Foundry), 387 Harris Ave., Providence 1, R. I.

BUILDERS
PROVIDENCE
Instruments
BIF INDUSTRIES

When inquiring check CP 6228 on handy form, pgs. 2-3

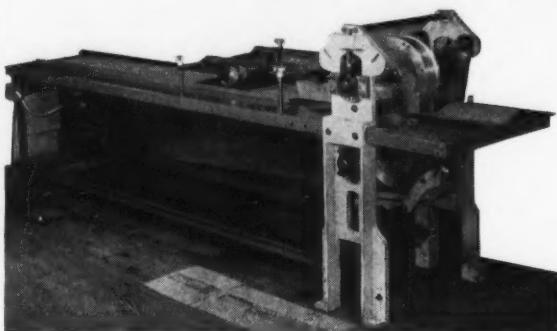
PROCESSING EQUIPMENT

Combined imprinting, folding of shingle wraps . . .

unit adjusts to accomodate corrugated board of varying size and thickness

Uses: Designed especially for printing supplementary information on corrugated shingle wraps and then folding the wrap along the scoring into a V-shape. Address, export marking, product identification and similar information may be imprinted.

Features: Quickly insertable rubber type is used. Type is resilient; therefore, no make-ready is necessary. Quick-



Prints 2,000 to 3,000 shingle wraps per hour

drying, non-caking ink is used. Type and ink rollers need not be cleaned after using.

Description: In operating machine, flat corrugated sheets are placed in the conveyor top where an endless chain carrying projecting fingers push the board through a plow for forming and past a drum holding rubber type for imprinting. This operation cuts down subsequent time spent in the shingle wrapping operation as the wraps are preformed.

Side rails are adjustable to take various sizes of containers. Spring loaded pressure roller compensates for variations in container thickness. Indexing arm on drum provides for centering impression. Inking is by felt roller with internal ink reservoir and rubber transfer roll.

Machine is ruggedly constructed and sealed ball bearings are used throughout. Motor of $1/4$ hp and enclosed reducer provide drive. Explosion proof motor is available where required.

Source: Corrugated carton printer-folder is made by The Industrial Marking Equipment Co., Inc., Dept. CP, 454 Baltic St., Brooklyn 17, N. Y. . . . or for more information check CP 6229 on handy form, pages 2 and 3.

Fighting fires, washing, spraying, all within scope of nozzle gun that attaches to ordinary hose . . .

operates on tap pressure of 30-120 lb to deliver hydraulic, flat spray or mist

Uses: Converts ordinary garden hose into a mobile and effective fire fighting device. An effective fog is produced for blanketing and extinguishing small fires. Gun is also useful for various spray applications such as cooling machines, washing and dampening applications, spraying lubricants, solutions.

Features: Nozzle has instantaneous trigger action and positive shut-off. Operates from tap pressure of only 30-120 lb.

Description: Trigger nozzles are available separately.

you save 50%
in TANK HEATING and COOLING with

PLATECOIL

(REPLACE PIPE COILS)



- ★ You SAVE 50% in tank SPACE
- ★ You SAVE up to 50% in initial COST
- ★ You have 50% LESS WEIGHT to handle
- ★ You SAVE 50% in maintenance LABOR as plates are changed from outside the tank without dumping solution

. . . besides all these you get faster heating or cooling. Take advantage of the engineering assistance offered by Kold-Hold to help you with your heat transfer problems.

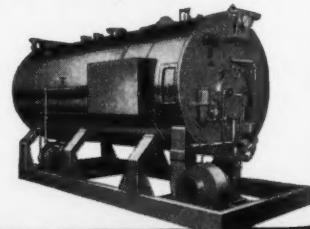
PLATECOIL
KOLD-HOLD MFG. CO.
LANSING, MICHIGAN

When inquiring check CP 6230 on handy form, pgs. 2-3

AUTOMATIC STEAM GENERATION

AMESTEAM GENERATOR

... a
Compact,
Self-
Contained
Unit



- FULLY PIPED AND WIRED
- FACTORY TESTED
- 80% EFFICIENCY

Oil, Gas or Oil-Gas Combinations
10 to 500 h. p. 15 to 200 lbs.

WRITE FOR BULLETIN TODAY!

AMES IRON WORKS

BOX 608 OSWEGO, N. Y.

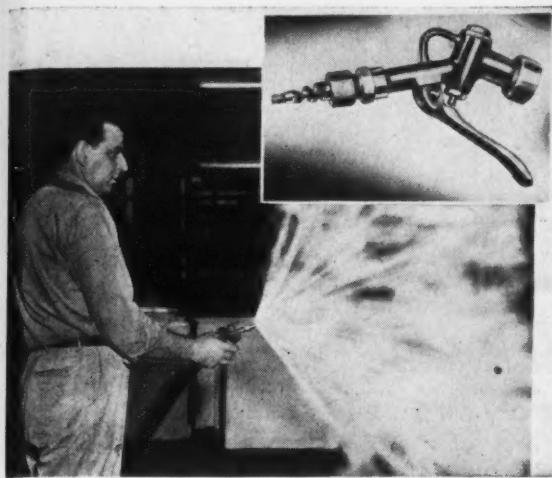
Builders of Better Boilers since 1848

Manufactured under

License in Canada by VOLCANO, Ltd., Montreal, P. Q.

When inquiring check CP 6231 on handy form, pgs. 2-3

CHEMICAL PROCESSING



Nozzle-gun attaches to ordinary hose

or in a kit which includes adaptors for giving a spray range from the conventional hydraulic spray, through flat spraying, to a mist spray.

Source: Trigger-type nozzle gun is a development of Bete Fog Nozzle, Inc., Dept. CP, 85 Pierce St., Greenfield, Mass. . . . or for more information check CP 6232 on handy form, pages 2 and 3.

**Scrubbing, waxing no hazard
with explosion-proof machine
for floor maintenance . . .**

four machine sizes from 12 to 19 inch disc available

Uses: Floor machine can be used for scrubbing, sanding, waxing, polishing, etc., in plants where explosion hazards exist.

Features: Machines use totally enclosed, explosion-proof motor.

Description: These disc type machines are available in sizes taking 12, 14, 16, and 19 inch discs. Design is

reported to keep center of gravity low for maximum stability while running. Gear reduction (from 1750 rpm at motor to 175 rpm at brush) is permanently lubricated ball-bearing type. Retractable rubber wheels are used for moving from one location to another.

Machine can be equipped with tank to hold and automatically feed cleaning solution. Felt, sheep's wool, steel wool, and wire brush discs are available as well as other discs for scrubbing, sanding and polishing.

Source: Explosion-proof floor machines are available from Multi-Clean Products, Inc., Dept. CP, 2277 Ford Parkway, St. Paul, Minn. . . . or for more information check CP 6233 on handy form, pages 2 and 3.

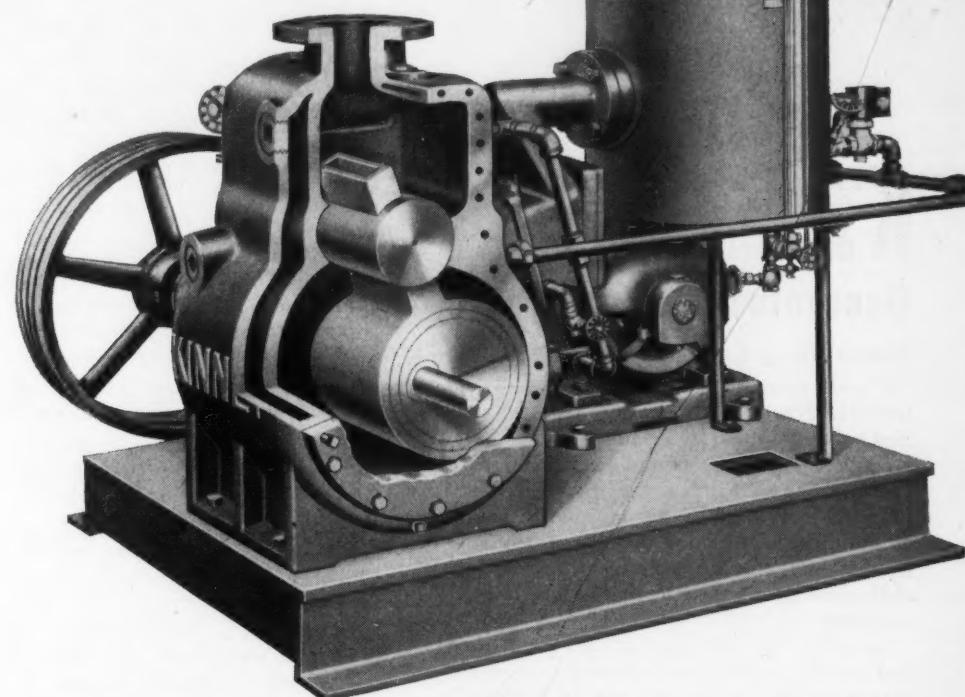


Multi-purpose floor machine

dealing solution. Felt, sheep's wool, steel wool, and wire brush discs are available as well as other discs for scrubbing, sanding and polishing.

**Looking for ways to make old things BETTER?
Looking for ways to make new things POSSIBLE?**

**Look into KINNEY
VACUUM PUMPS**



More vacuum processes depend on this "vacuum powerhouse" than on any other type or make of pump. More new developments — new products, new improvements in old products — are made possible and practical by this pump. Every day, more and more engineers use this pump to make their vacuum dreams come true — in the laboratory, the pilot plant, the production line.

Have you looked into Kinney Vacuum Pumps? Do it today — just fill out and mail the coupon. KINNEY

MANUFACTURING CO., Boston 30, Mass. Representatives in New York, Chicago, Cleveland, Houston, New Orleans, Philadelphia, Los Angeles, San Francisco, Seattle.

FOREIGN REPRESENTATIVES: General Engineering Co. (Radcliffe) Ltd., Station Works, Bury Road, Radcliffe, Lancashire, England • Herrocks, Roxburgh Pty., Ltd., Melbourne, C. I. Australia • W. S. Thomas & Taylor Pty., Ltd., Johannesburg, Union of South Africa • Novelectric, Ltd., Zurich, Switzerland • C.I.R.E., Piazza Cavour 25, Rome, Italy.



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**KINNEY MANUFACTURING CO.
3573 WASHINGTON ST., BOSTON 30, MASS.**

Gentlemen:
Please send illustrated Bulletin V51. We are
interested in:
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 Vacuum dehydration

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Company.....

Address.....

City..... State.....

When inquiring check CP 6234 on handy form, pgs. 2-3



"K" on a fitting is our Guarantee-your safeguard

Kuhns fittings have carried the trade-mark "K" ever since the business was established in 1887. In fact, Kuhns fittings were the very first to be identified by a trade-mark.

With the passage of the years, and with millions of "K" fittings proving their worth in actual service, "K" has become a symbol of quality. That long and commendable background, therefore, imposes upon us the obligation to maintain that high quality standard.

In using "K" fittings, you are well fortified against installation and service troubles. The precision machining of "K" fittings assures convenient make-up, tight joints, and symmetrical runs. Scientific metallurgical control, skillful molding, and critical inspection assure fittings without sand holes, cold checks, uneven walls, or other imperfections.

These facts are verified by the experience of contractors everywhere. That's why the usage of "K" fittings is continually growing.

It will pay you to order fittings from suppliers who handle the "K" line. Be sure to insist upon "K's."

THE KUHNS BROTHERS COMPANY

1808 McCall Street
Dayton 1, Ohio

Established 1887



CAST-IRON FITTINGS

3,000 Shapes and Sizes

When inquiring check CP 6235 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Offers improved vibrator for concrete . . .

pneumatic unit has automatic oiler, provides 8000 cpm, won't lose grease from bearings

Uses: Pneumatic vibrator is for compacting freshly poured concrete and directing its movement as it is poured into forms.

Features: Highlights include an adjustable automatic air line oiler, roll type throttle providing up to 8000 vibrations per minute, and a steel sleeve around the vibrator unit which eliminates possibility of losing grease.

Description: Thor "521" pneumatic concrete vibrator consists of a 2-3/4" diameter x 17 1/2" long steel cylinder at the end of a 5' length of combination air and exhaust hose. A ball bearing rotary air motor and vibrator unit are sealed in the steel cylinder.

10, 15, and 20' combination air & exhaust hose are available — or, a 15' length of 3/4" extension hose is available for use with the standard 5' length.

Source: Development of the Independent Pneumatic Tool Company, Dept. CP, 175 N. State St., Aurora, Ill. . . or for more information check CP 6236 on handy form, pages 2 and 3.

Pulling, pushing and lifting among range of applications of constant delivery pumps . . .

fixed stroke type units operate quietly at speeds to 1,800 rpm; pressures 3,000-5,000 psi

Uses: Especially suited for heavy-duty pushing, pulling, lifting and lowering applications, for maintaining high static loads on large clamping rams and in similar applications.

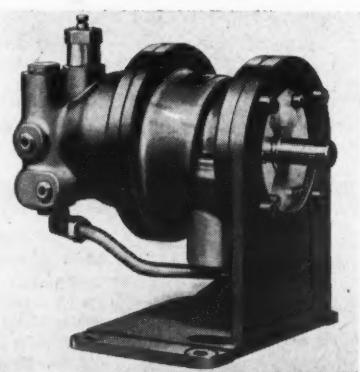
Features: Relatively few working parts. Operate quietly at speeds up to 1,800 rpm. Over 10 hp is transmitted by units only 7 x 10 x 13".

Description: Heavy-duty units are of fixed-stroke type. Coupled with pressure and flood lubrication by high grade oil in the system, they operate at pressures up to 3,000 and 5,000 psi. Volume of oil delivered varies with drive shaft speed. Oil is delivered in one direction.

Each unit consists of an axial rolling piston pump, a supercharging gear pump, a gear pump relief valve and an adjustable reverse flow type high pressure relief valve. About 135 cu in per min excess gear pump oil at 100 psi is available for auxiliary purposes. Pump, work and machine are protected against overload.

Three models are available. Illustration shows pump with right angle bracket mounting.

Source: HG axial rolling piston pumps are built by The Oilgear Company, Dept. CP, 1588-A Pierce St., Milwaukee 4, Wis. . . or for more information check CP 6237 on handy form, pages 2 and 3.



Axial rolling piston pump



COVERS PIPES TANKS, WALLS

Anyone can brush, trowel or spray NoDrip on any clean, dry surface. Goes on like plaster, forms a seamless, protective coating. STOPS CONDENSATION DRIP!



NoDrip

NoDrip keeps equipment and floors safe and dry; prevents corrosion of metal and prolongs its life. Acid, alkali and brine resistant. Comes in 1, 5, and 55 gal. drums, ready for use.

TRY NoDrip

Apply NoDrip to a small area, compare the results with uncovered portions.

Send for free NoDrip Handbook

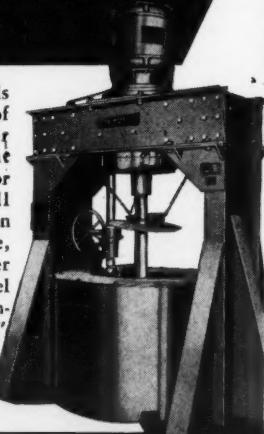
J. W. MORTELL CO., 530 Burch St., Kankakee, Ill.

When inquiring check CP 6238 on handy form, pgs. 2-3



Tolhurst Suspended Centrifugals are the long-time champions of speedier, smoother and safer processing. Equally efficient whether slow or fast starts or repeated short cycles at full speed are required. Baskets can be perforate or imperforate, constructed of steel, steel rubber covered, stainless steel, monel and other alloys. Basket diameters: 26", 32", 40" and 48"

Can be furnished
completely flame-
tight, if desired.



Write for Illustrated Catalog TC-3-48

TOLHURST CENTRIFUGALS

Division of AMERICAN MACHINE AND METALS, INC.
East Moline, Illinois

When inquiring check CP 6239 on handy form, pgs. 2-3

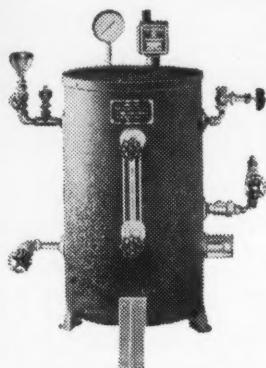
Delivers full steam pressure for lab use in 20 minutes . . .

miniature ASME boilers made in 4 sizes

Uses: Designed especially for use with laboratory apparatus.

Features: Starting with a cold boiler, generator is capable of delivering full steam pressure within 20 minutes.

Description: Made of ASME code heavy welded steel, boilers are UL approved. Submerged heating



Miniature generator

elements contribute to heat transfer efficiency. Automatic pressure regulator delivers up to 30 psi. Working pressure is 100 psi.

Four sizes are offered, smallest of which has a water capacity of 2 gal with a 7 1/2 x 16" boiler and weighs 20 lb.

Source: Miniature steam generators are available from Palo Laboratory Supplies, Inc., Dept. CP, 81-83 Reade St., New York 7, N. Y. . . or for more information check CP 6240 on handy form, pages 2 and 3.

Substitute steels evaluated

Four-page, two-color technical bulletin gives information of assistance in selecting alternate grades of low carbon, or carburizing grades of steel. It presents condensed data on microstructure, critical points, effect of alloy elements, forging, machining, welding and thermal treatment for 14 well-known alloy steels. Bulletin TDC 149 is issued by The Babcock & Wilcox Tube Company, Dept. CP, Beaver Falls, Pa. When inquiring specify CP 6241 on handy form, pages 2 and 3.

For more information on product advertised at right, specify CP 6242 . . . see information request blank between pages 2-3.



This close-up clearly shows the ribs or corrugations which add strength to Childers Jacketing and also make it form more easily around lines. Aluminum strapping and seals are a quick, inexpensive way to attach the jacketing. They can be used without any special tools and take no special training for the installers.

Does long lasting aluminum cost too much for covering your insulated lines? Not when you specify this new type weather-proof jacketing. It has been specially developed to cost little more than ordinary temporary jacketing materials.

New Low-Cost Jacketing Cuts Maintenance on Insulated Lines

AT LAST an aluminum jacket has been "engineered" especially to protect outdoor lines in refineries and chemical plants. It is the first "permanent-type" jacketing that offers both low initial cost and low application cost.

After two years of tests and major installations at 431 outdoor locations in chemical plants, refineries and power plants, the Childers Manufacturing Co. of Houston has rung up an impressive cost-cutting record with their Childers Aluminum Jacketing.

Secret behind this low cost is the thin aluminum sheet—.006" thick—which is the weather-protecting sheath of the jacketing. It is ribbed (as pictures show) for extra strength and to facilitate form-

ing around the line. This aluminum has proved thick enough to resist weathering and usual abrasion, but costs much less than heavier aluminum sheets.

Easy application of this Childers Jacketing cuts labor bills drastically. It comes from the factory in easy-to-handle rolls that are four feet wide and either 100 feet or 200 feet long. It is light and flexible to handle as the men put it on the line. No roll forming required as with heavy, un-crimped material. It can be cut off and attached just the same as the old-fashioned tar-paper that was sometimes used for jacketing.

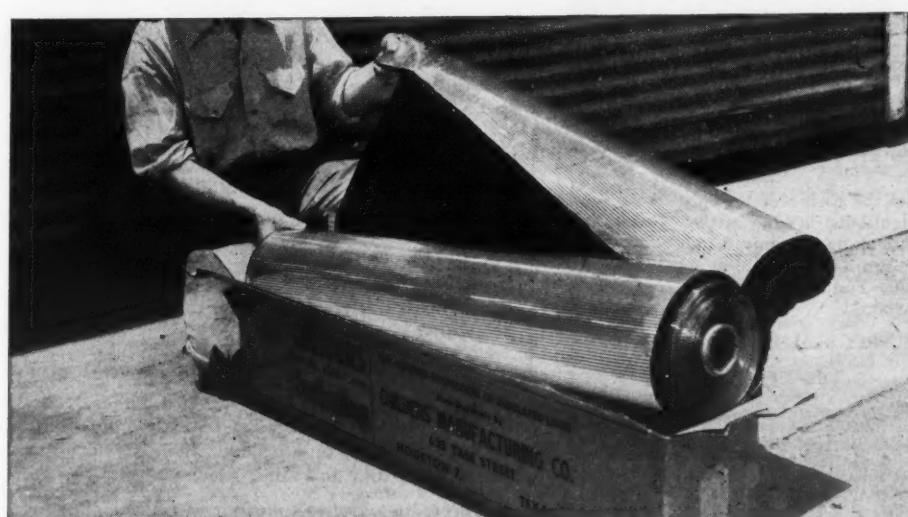
You can attach Childers Jacketing around your insulated lines by one of several easy methods. The use of aluminum strapping and seals is probably the best. Sheet metal screws or Minnesota Mining's No. 471 tape can also be used.

The Childers jacketing can be removed and re-used.

A moisture barrier is attached to the back of the jacketing to give positive protection for the aluminum when it is used with alkaline insulating materials.

No painting, no rust-proofing, little maintenance—that's the advantage of aluminum!

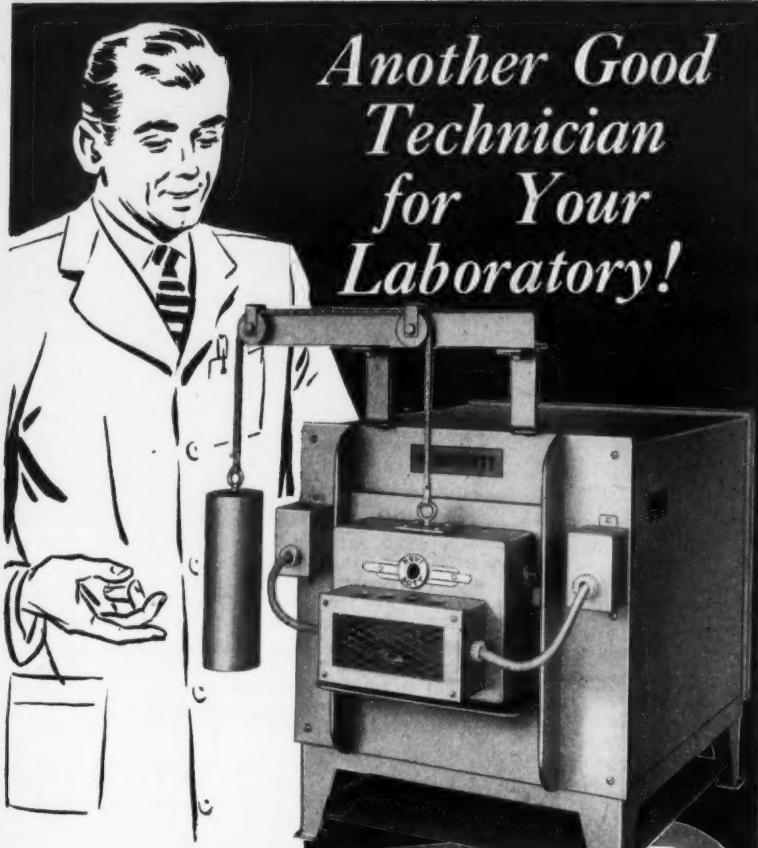
Hundreds of design engineers and maintenance engineers have agreed they save money for their firms and trouble for themselves by changing their jacketing specs to Childers 100%. That should make it worth your testing too—and a test roll costs only \$40.00 for 400 sq. ft. (with moisture barrier attached—price for 800 sq. ft. without moisture barrier \$62.00). That's a good investment in any plant. (Advt.)



This is how Childers Aluminum Jacketing is shipped in easy-to-handle rolls. It is quite flexible, yet stands up under severe weathering.

FOR FULL INFORMATION write Childers Manufacturing Co., Dept. LP-2, 625 Yale St., Houston 7, Tex., for complete literature. Childers has engineering representatives in principal cities to work with you on specific problems.

★ ★ ★



"ALLOY 10" HIGH TEMPERATURE HEVI DUTY MUFFLE FURNACES

The Hevi Duty "Alloy 10" Muffle Furnace is used efficiently in all laboratory operations where temperatures to 2350° F. are required.

If your type of operation includes the drying of precipitates, ash determinations, fusions, ignitions, heating metals and alloys, enameling and enamel smelting, ceramic firing or exact experimental test work, be sure to investigate these Hevi Duty High Temperature Muffle Furnaces. Write for Bulletin LAB-339 or —

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HEVI DUTY ELECTRIC COMPANY
HEAT TREATING FURNACES **HEVI-DUTY** ELECTRIC EXCLUSIVELY
DRY TYPE TRANSFORMERS — CONSTANT CURRENT REGULATORS
MILWAUKEE 1, WISCONSIN

When inquiring check CP 6243 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Features chemical grinding

Eight-page publication features grinding, flaking, and grading equipment for chemical products. Four typical flow charts are included. Bulletin 06B7633 is issued by Allis-Chalmers Manufacturing Company, Dept. CP, 1151 S. 70th St., Milwaukee, Wis. When inquiring specify CP 6244 on handy form, pages 2 and 3.

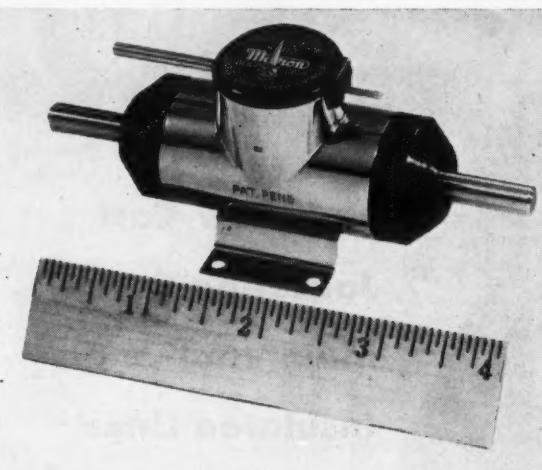
Push rod control featured in variable-speed drive . . .

speed ratio easily and infinitely variable from one-sixth to six

Uses: Variable-speed drive has ratings up to 72 oz-in torque, 0.025 hp, and 20,000 rpm, and finds applications in timers, recorders, controllers, computers, indicating mechanisms, and automatic control.

Features: Speed ratio is easily and infinitely variable from 1/6 to 6 by means of a simple push rod.

Description: Through the application of an extended push rod, levers, cams, or virtually any properly applied



Variable-speed drive

linkage, a wide variety of means of control are possible. Extension of the push rod makes remote lever control possible, and a remote ratio indication is obtained by means of a scale associated with the remote actuating speed indicator.

Source: The 4C Miniature variable-speed drive is a product of the Metron Instrument Company, Dept. CP, 432 Lincoln St., Denver 9, Colo. . . or for more information check CP 6245 on handy form, pages 2 and 3.

Handles medium pressure, temp with multi-stage pumping . . .

approximate limits are 1000 gpm at 1200 psi and 400° F.

Uses: Especially well suited for boiler feedwater, oil refinery services for handling liquids ranging from propane to strong caustic, and general water services such as de-scaling, hydraulic and mine drainage.

Features: Available in four, six, and eight stage models with top service limit of 1000 gpm at 1200 psi and temperatures from 350 to 400° F.

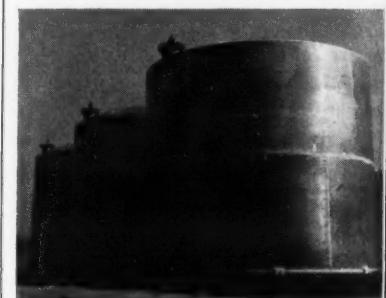
Description: Use of opposed impellers has led to the

ANOTHER HORTON ALUMINUM TANK



REDUCING CORROSION for Hercules Powder

Recently, Hercules Powder Company's plant at Parlin, New Jersey, installed another Horton aluminum tank (above), for acid storage. Here is further evidence of the increasingly important part played by Horton structures in the chemical industries. For quotations on tanks of solid, clad, or lined corrosion-resistant metals, write our nearest office.



CHICAGO BRIDGE & IRON COMPANY

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Detroit 26	1535 Lafayette Bldg.
Houston 2	2151 National Standard Bldg.
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New York 6	3314-165 Broadway Bldg.
Philadelphia 3	1650-1700 Walnut St. Bldg.
Salt Lake City 4	507 West 17th South St.
San Francisco 4	1545-200 Bush St.
Seattle 1	1307 Henry Bldg.
Tulsa 3	1649 Hunt Bldg.
Washington 6, D.C.	1158 Cafritz Bldg.

When inquiring check CP 6246
on handy form, pgs. 2-3

SET THIS METER FOR BATCH MEASUREMENT OF LIQUIDS



NIAGARA Electriccontact METERS

Accurate... Automatic

Niagara Meters offer the simplest method of measuring commercial liquids quickly, accurately. Obsolete tanks and gauge sticks are replaced by Niagara volumetric meters. An electric contact unit provides automatic shut-off for batch measurements. Engineered for a wide variety of industrial uses, Niagara Electriccontact Meters are available in several models, including stainless steel for metering chemicals. It will pay you to investigate dependable Niagara Meters.

Send Coupon for COMPLETE DETAILS

I would like complete information sent me on how Niagara Electriccontact Meters increase processing accuracy for:

Liquid _____

Temp. °F. Pressure..... p.s.i.

Flow rate. g.p.m.

Maximum batch _____

Company _____

By _____

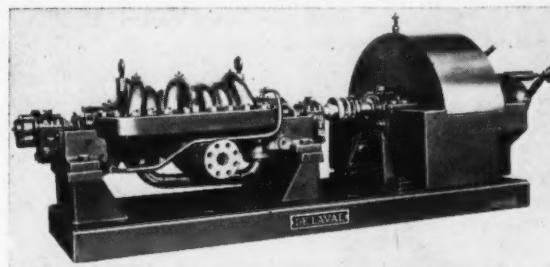
Address _____

BUFFALO METER CO.
2892 MAIN STREET
BUFFALO, N. Y.

When inquiring check CP 6247
on handy form, pgs. 2-3

PROCESSING EQUIPMENT

name "Oppeller" for this pump. It has a horizontally split casing with suction and discharge nozzles on opposite sides of the lower half of the casing. Impellers are mounted back-to-back to balance axial thrust and the volutes are



Opposed impeller pump

staggered 180° to balance radial thrust. Other features include a water cooled box for high temperatures and high suction pressures, and single or double mechanical seals. These seals can be replaced with a breakdown bushing.

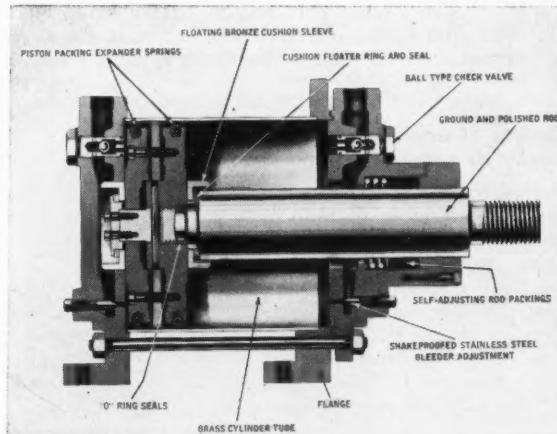
Source: Manufactured by De Laval Steam Turbine Company, Dept. CP, Trenton 2, N. J. . . or for more information check CP 6248 on handy form, pages 2 and 3.

Air, oil or water operate cylinders for actuating range of processes . . .

variety of models provide selection to meet numerous mounting requirements

Uses: For wide range of actuating requirements.

Features: Cork floater ring facilitates cushion alignment with the head and insures a seal during cushioning. Spring-backed chevron rod packings are self-adjusting for



Low-pressure cylinder for operation to 110 psi

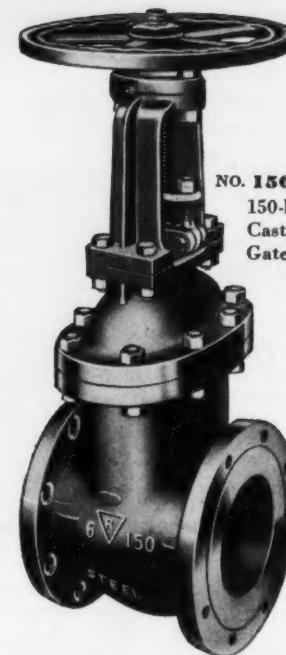
consistently correct compression. Flange design permits removal of front head without disturbing mounting.

Description: Cylinders are designed for operation up to 110 psi, and with minor modifications, for higher pressures depending on cylinder diameter and operating medium (air, oil or water).

Standard models permit selection of a cylinder to meet almost any requirement.

Source: Hanna Engineering Works, Dept. CP, 1765 N. Elston, Chicago, Ill. . . or for more information check CP 6249 on handy form, pages 2 and 3.

R·P&C VALVES



NO. 1501
150-lb.
Cast Steel
Gate Valve

Throughout Industry—It's R·P&C for Quality Cast Steel Valves

• R·P&C Cast Steel Valves are on the job throughout industry helping to maintain uninterrupted production with their long and trouble-free service.

• Your R·P&C distributor has them—or can get them for you. Your nearest R·P&C district office will gladly furnish details about the line.

ACCO



Reading, Pa., Atlanta, Baltimore, Boston, Chicago,
Denver, Detroit, Houston, New York, Philadelphia,
Pittsburgh, San Francisco, Bridgeport, Conn.

R·P & C VALVE DIVISION
AMERICAN CHAIN & CABLE

"Intentionally Better"
READING,
PRATT & CODY
VALVES

When inquiring check CP 6250 on handy form, pgs. 2-3

What every H₂SO₄ Producer should know about Molten Sulfur Filtration

HERE'S HOW TO BOOST ACID OUTPUT AND REDUCE COSTS—IN ONE MOVE

Contact sulfuric acid producers can increase production considerably above rated capacity, and cut operating costs proportionately, simply by putting Niagara sulfur filters ahead of the burners.

These are the proved results of Niagara filtration in existing contact acid plants:

REDUCTION OF SHUT-DOWNS THROUGH DIRT ELIMINATION . . . Dirt is eliminated *before it enters* the acid train. Niagara-filtered sulfur has average ash content of .005% or less.

LOWER OPERATING PRESSURE . . . As a result of ash reduction, pressure rises over a period of years are infinitesimal.

LOWER CATALYST COST . . . Catalyst cleaning is almost eliminated. The percent of dust carried into the converter is negligible.

CORROSION REDUCTION . . . Sulfur is dehydrated and neutralized in the filters, with resultant decrease in corrosion throughout the plant.

REDUCTION OF "PLUGGING" AND "SULFATING" . . . Pumps, guns, and other equipment require less maintenance and cleaning.

SIMPLIFIED SUPPLY PROBLEMS . . . Off-color grades of sulfur may be processed, with good results.

Saves Construction in New Plants

New contact acid plants can be constructed more cheaply if a Niagara packaged sulfur filter system is installed. Settling pits and gas filters can be eliminated. Melting pits can be made smaller, since agitation can be incorporated without danger of stirring up dirt from the bottom of the pits.

A Niagara sulfur filter system requires low initial investment, takes up little space, and needs no additional labor. Daily operating costs are usually less than one cent per ton of acid produced. Niagara engineers, who developed and pioneered modern sulfur filtration, can give you full details on the type of system that will best help your acid production in the present emergency. Write us today.



Niagara Filter
CORPORATION

3083 MAIN ST., BUFFALO 14, N.Y.

IN EUROPE—NIAGARA FILTERS EUROPE, 36 Leidsegracht, Amsterdam-C, Holland

When inquiring check CP 6251 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Dehumidifies rooms of 8000 cu ft volume . . .

compact, portable unit begins to dry air when it is plugged into 110 volt line

Uses: Will dehumidify any closed area of tight construction up to about 8000 cu ft.

Features: Now in production after extensive lab and field tests, dehumidifier is compact and portable (weighs 55 lb). Unit is put into operation simply by plugging into 110 volt AC line.

Description: Damp air is drawn into dehumidifier by fan located inside the unit. Moisture condenses on cold coils and drops to pan. Pan may be emptied (about once a day) by hand, or garden hose or copper pipe may be connected for automatic discharge of condensate.



Dehumidifier is compact, portable. Operator coil is aluminum with extended surface for high efficiency; condenser uses finned copper tubing. Air flow rate is 110 cfm. Maker can supply a simple plug-in control like a home thermostat to maintain humidity at a desired percentage.

Measurements of the dehumidifier are: 17" long, 13" wide and 15½" high. Finish on outside is baked crackle green.

Source: Development of Abbeon Supply Co., Dept. CP, 58-10 41st Drive, Woodside, N. Y. . . . or for more information check CP 6252 on handy form, pages 2 and 3.

Variety of processing equipment briefly described

General bulletin pictures and describes 25 pieces of equipment. Many types of mills ranging from attrition and colloidal types to hammer mills as well as gravity separators, magnet traps, and defibrators are covered. This bulletin is intended as an index of various types of equipment available; further information is available from the manufacturer on all equipment shown in it. Bulletin 52 is issued by The Bauer Bros. Co., Dept. CP, 1728 Sheridan Ave., Springfield, Ohio. When inquiring specify CP 6253 on handy form, pages 2 and 3.

Measured amount of lubricant delivered to parts passing on production line . . .

production capacity is one delivery every minute

Uses: For delivering a measured amount of grease to assemblies as they proceed down an assembly line.

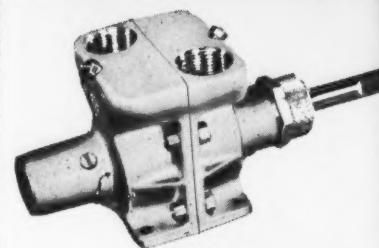
Features: Production capacity is 1 delivery per minute.

Description: Device consists of an air line filter, hand operated air valve, air operated power cylinder, and a measuring cylinder.

In operation, air passes through filter, regulator, and

ECO
SELF-PRIMING PUMPS

HAVE NO EQUAL
for DEPENDABLE
SMALL VOLUME
PROCESS or
LABORATORY WORK



**SELF-PRIMING MULTI-PURPOSE
STAINLESS STEEL PUMPS,
eliminate Aeration, Foaming and
PREVENT CORROSION.**

ECO GEARLESS PUMPS have been found ideally suited for the conveyance of: Deionized Water, Colloidal Emulsions, Resinous, Starch, Wax Detergents, Petroleum Base & other, Viscous Sizings for the Paper & Textile Industries. Water Treatment Chemicals, Silicate of Soda etc. Dyes, Processing Oils & Chemicals for the Metal, Paper & Textile Industries, Glues, Organic & Synthetic. Rubber Latex, Textile Impregnations, Plating Solutions, Degreasing Solutions, Soaps & Cosmetic Creams. Corrosive Liquors & Filtrates.

PUMP HOUSING: Fully machined, Non-porous # 316 Stainless Steel Precision Castings or Naval Bronze Forgings.

CAPACITIES: 1 to 20.7 G.P.M.

PRESSURES: 0 to 150 P.S.I.

SPEEDS: 600 to 3450 RPM
Ratings Subject to Viscosity and Temperature

PUMP PORTS: 3/8", 1/2", 3/4" Pipe Tap
BEARINGS: Self Lubricating Graphite
IMPELLERS: Synthetic Rubber or Microcarba

Available with Motor Unit, and Ball Bearing Pulley for Belt Drive.

SEND FOR ECO PUMP BULLETIN CP

ECO ENGINEERING CO
12 NEW YORK AVENUE NEWARK 1, N.J.

MANUFACTURERS OF PRECISION
ENGINEERED SMALL CAPACITY
POSITIVE DISPLACEMENT PUMPS

When inquiring check CP 6254
on handy form, pgs. 2-3

CHEMICAL PROCESSING

heart of the strainer

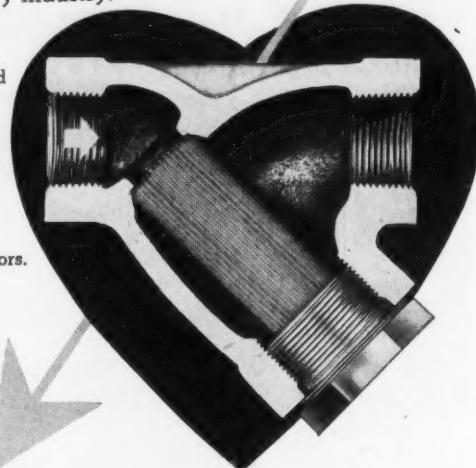
A high-grade, woven Monel wire screen is the heart of the Yarway Strainer—one reason why hundreds of thousands of these strainers are policing pipe lines in nearly every industry.

OTHER REASONS—

- cadmium plated bodies and screen caps
- straight threads, machined faces and spark-plug-type gaskets on screen caps
- ten sizes from $\frac{1}{4}$ " to 3"

Sold by 216 industrial distributors.
Write for Bulletin S-203.

YARNALL-WARING CO.
125 Mermaid Ave.
Philadelphia 18, Pa.



YARWAY STRAINERS

When inquiring check CP 6259 on handy form, pgs. 2-3



Bulletin 8210

General Purpose Control Valves

- ★ Full Port Area—Packless
- ★ For Air, Gas, Water, Brine, Freon, Methyl Chloride, Light Oil and other Liquids and Gases up to 212°F; Pressures up to 400 pounds
- ★ Several Auxiliary Variations
- ★ Several Sizes: $\frac{1}{2}$ to $2\frac{1}{2}$ inches

Our Bulletin 8210 Solenoid Valves are designed for those shut-off requirements where a simple, rugged, automatic control will serve. They close instantly when current to the coil is cut off. Full line pressure on top of the valve piston aided by a powerful spring assures tight closing. They reopen fully when the coil energy is restored.

Bulletin 8211 Valves are similar except that they have Explosion-Proof Solenoids approved by Underwriters' Inc., Class 1, Group D, Hazardous Location.



If you have any automatic control problems that fit into the above class, study fully the merits of ASCO Bulletin 8210 and 8211 Solenoid Valves. Write us anyway, regardless of your problems, because we have many other types of solenoid valves.

When in need of Electromagnetic Controls, come to us.

Automatic Switch Co.
379 Lakeside Avenue
Orange, New Jersey

When inquiring check CP 6260 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Through 10' of concrete
one inch thick
in 1 minute . . .

saw blades for tile, glass block, concrete use diamond blades

Uses: Blades are used with powered saw for masonry and building materials including glazed tile, brick, glass block, marble, etc., as well as concrete and asphalt base aggregates.

Features: Blades recommended for concrete can make a one inch deep cut at the rate of ten feet per minute; asphalt blades handle same cut in asphalt at twelve feet per minute.

Description: The blades for concrete and asphalt have been added to the list of blades available for the other materials above. Diamond Blades (Concrete) are available for all types of aggregate and age of concrete. They are manufactured in diameters from eight to eighteen inches.

Source: Development of Clipper Manufacturing Company, Dept. CP, 2800 Warwick, Kansas City 8, Mo. . . . or for more information check CP 6261 on handy form, pages 2 & 3.

Design lowers cost of motor . . .

fractional hp split phase motor embodies standard features

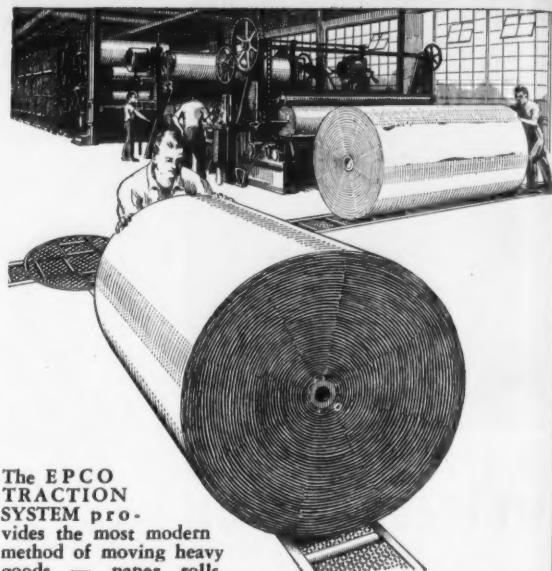
Uses: General purpose motor.

Features: Motor is offered in a limited number of specifications; resulting mass production lowers cost.

Description: "Special Service" motor is intended for use where high starting current is not objectionable. Break-down torque is in accordance with NEMA standard for the basis of rating. Service factor is 1.00. Welded steel frame has rigid cast-iron end brackets of drip-proof design. Feet are welded to frame, but shaft height is held accurate. Bronze sleeve bearing and thrust collar use wool yarn lubrication with reserve oil capacity.

Rotor is high pressure cast aluminum, and is dynamically balanced. Lamination iron of the rotor is skewed for quiet operation. Windings incorporate polyvinyl acetal insulation with baked phenol formaldehyde varnish. Motor can be furnished with a cushion base if desired.

Source: Made by Century Electric Company, Dept. CP, 1806 Pine St., St. Louis, Mo. . . . or for more information check CP 6262 on handy form, pages 2 and 3.



The EPCO TRACTION SYSTEM provides the most modern method of moving heavy goods — paper rolls, drums and vats of chemicals. Epcos is now used in more than 100 paper mills and corrugated box plants. EPCO ball-bearing Trackage never requires more than 4" foundation and may be installed in any type of flooring. Hand and power trucks can cross without causing damage to trackage. EPCO system keeps the load on the floor avoids accidents, saves man hours, replaces caster wheel dollies and eliminates damage to floors.

Let us help plan your layout.

ENGINEERING PRODUCTS CO., INC.
126 South Michigan Ave., Chicago 3, Ill.

When inquiring check CP 6263 on handy form, pgs. 2-3

Save with Pangborn

Unit-Type Dust Collectors

- ★ Economically priced.
- ★ Shipped assembled, to cut installation cost.
- ★ Small size permits locating at dust source, reducing piping cost, power requirement.
- ★ Using multiple unit collectors in place of "central" systems gives more flexibility, keeps various collected dusts separate for salvage.

Put this small, factory-assembled Pangborn type "CL" Dust Collector in areas of heavy dust concentration. All-metal construction (except filter cloth) . . . equipped with famous Pangborn non-sag screen frames (individually removable) and motor-driven screen shaker. Available in six sizes from 180 to 820 sq. ft. cloth area. Write for Bulletin 912 which gives specifications and engineering data to: PANGBORN CORP., 2700 Pangborn Blvd., Hagerstown, Md.

Look to Pangborn for the Latest Developments in Dust Control and Blast Cleaning Equipment

STOP THE DUST HOG from stealing profits with

Pangborn
DUST CONTROL

When inquiring check CP 6264 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Elevated temperature spraying
Improves application of high
solid content lacquers . . .**

material heated by electricity and/or steam units available in sizes for 8-250 gph

Uses: Designed for spraying of high solid content lacquer, and similar materials, at elevated temperatures. Method of application entails predetermined thermostatically controlled temperatures. Less thinner is required and a faster, more uniform finish equal to 2 or more coats of cold material is obtained. As much as 60% more solid content may be sprayed with hot synthetic than with cold, and 45% more or over, with hot lacquer.

Features: Material to be sprayed heats rapidly, usually in about 15 minutes. Temperatures for spraying are in range of 160 to 180°F (higher temperatures are obtainable, if desired). Units are explosion proof and simple in design. Should the material carrying tubes clog due to oversize in operation, they are easily cleaned without dismantling the equipment.

Processors are offered the possibility of using higher viscosity materials in formulating for hot spray, thus providing films with greater cold check resistance, tensile strength, and toughness at no loss of solids. Operating characteristics contribute to better flow out, elimination of blushing and orange peel and more coverage per gallon.

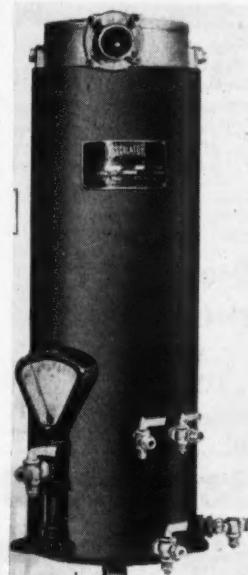
Description: Units are made in capacities for delivery of from 8 to 250 gph and in recirculating and non-recirculating types. The latter is recommended for use with hot lacquer. All units up to 40 gph capacity are electrically heated. Heating elements and the material carrying tubes are embedded in solid metal producing fast heat transfer.

With the recirculating type, heated material is circulated to the spray gun by a system actuated by air or electric driven pump. Material is drawn direct from material container so that a pressure tank is not required. Heated air is provided, if desired. (Not recommended for hot lacquer spray.)

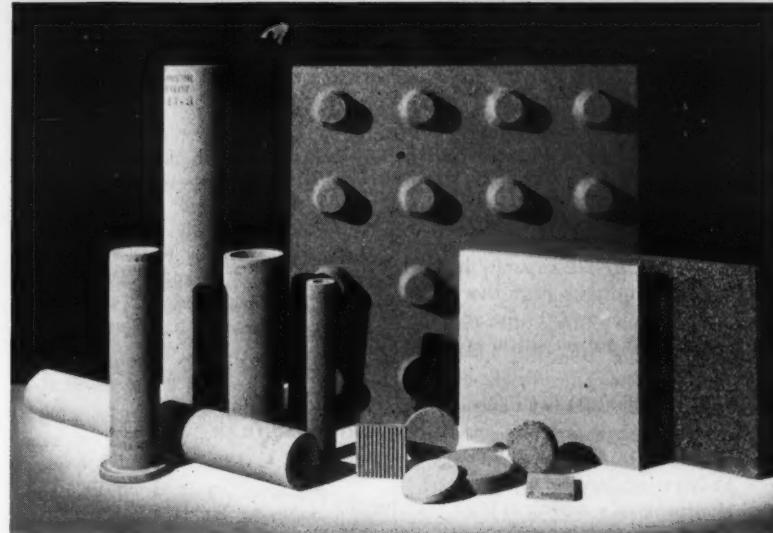
Source: Viscolator units are built by Reliable Products Mfg. Co., Inc., Dept. CP, 123 DeKalb Ave., Brooklyn 1, N. Y. . . or for more information check CP 6265 on handy form, pages 2 and 3.

**Refrigeration catalog
has manual section**

Much practical information, including heat leakage factors of common types of insulation and average values for air infiltration loads is given in the reference-manual section of catalog. Methods of calculating refrigeration requirements of rooms, cabinets and coolers are shown. Indexed and sectionalized catalog is issued by Kold-Hold Manufacturing Company, Dept. CP, Lansing, Mich. When inquiring specify CP 6266 on handy form, pages 2 and 3.



Sprays lacquer, synthetics



Gas-diffusing or filter mediums of Norton ALUNDUM* fused alumina are manufactured for a wide variety of commercial and laboratory operations.

Why should your porous mediums be uniformly porous?

Porosity may be defined as the percentage ratio of pore space by volume to the bulk volume of the piece. There are three types of pores: open, closed, and closed at one end. Obviously, the only passage through the medium is via the open pores. Therefore, if the flow of air or gas through the medium is to be uniform, it is essential that the medium's pores be uniformly distributed.

Norton, long-experienced in the development of fused alumina products, meets this need with porous mediums of ALUNDUM material. Thanks to "controlled structure" processing, all Norton ALUNDUM porous mediums have substantially the same pore volume — while the size and number of open pores are varied to provide the desired permeability.

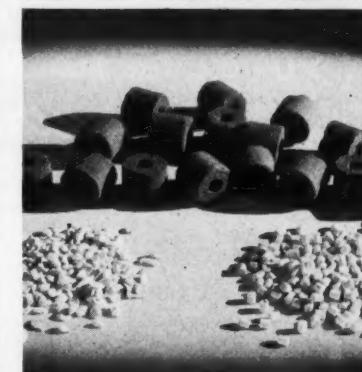
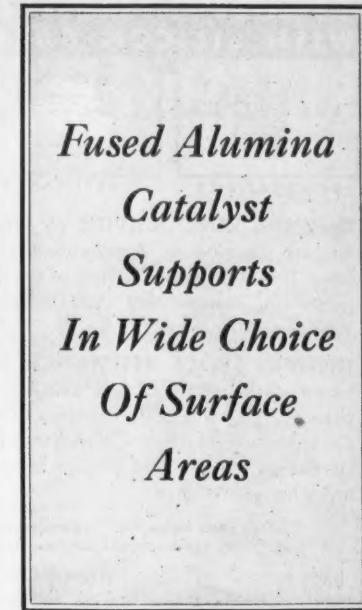
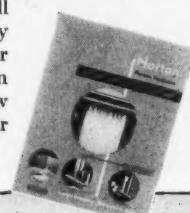
Other Advantages

ALUNDUM porous mediums are unaffected by acid, neutral or slightly

alkaline conditions encountered in commercial and laboratory processes . . . they are exceedingly refractory, withstanding temperatures up to 1000° C . . . their unusual strength assures maximum resistance to abrasion, high operating pressures and breakage or chipping in handling.

Send For Bulletin

Bulletin No. 140 contains complete data as to physical structure, etc., of Norton ALUNDUM porous mediums, and other refractory products. Let it help you decide whether they will benefit your processing. Your Norton representative will be glad to supply you with a copy, or write direct. Norton Company, 567 New Bond St., Worcester 6, Mass.



Norton Company is now making catalyst supports in commercial quantities, in five different mixtures of refractory grains, ranging from 77% to 89% fused alumina. Water absorption values of these catalyst supports vary from 12% to 22% by weight, while surface areas by the nitrogen absorption method range from 0.025 to 0.821 square meters per gram. They are made in spheres, pellets and rings of varying sizes.

Get All The Facts

Your Norton representative will be glad to give you full information about these new catalyst supports. Or, a letter direct to us will get prompt attention.

NORTON COMPANY
567 NEW BOND STREET
WORCESTER 6, MASS.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries

NORTON
TRADE MARK REG. U. S. PAT. OFF.
Making better products to make other products better
POOROUS MEDIUMS

Canadian Representative
A. P. GREEN FIRE BRICK CO., Ltd. TORONTO, ONTARIO

When inquiring check CP 6267 on handy form, pgs. 2-3

Transfer HEAT-10 Times FASTER WITH SILICON CARBIDE REFRactories



THERMAL CONDUCTIVITY of Electro Silicon Carbide is approximately ten times that of fire clay. Think of the time gains in transferring heat through muffles and hearths!

THERMAL SHOCK RESISTANCE, combined with relatively low thermal expansion, guarantees that Electro Silicon Carbide Refractories will withstand the shocks of sudden and violent temperature changes.

Tell us your refractory requirements so that we can apply our 32-year experience with special purpose refractories to your individual needs.

Write NOW For Special Bulletin B-749

**(Unique, Versatile Artificial Mineral)*

ELECTRO REFRactories & ABRASIVES CORPORATION

344 Delaware Ave., Buffalo 2, New York

Plants: Buffalo, N. Y. and P. Q., Canada • Regional Warehouse: Los Angeles 58, Cal.

Special REFRactories

When inquiring check CP 6268 on handy form, pgs. 2-3

Yes ...WE FABRICATE TO
U-68, 69 AND 70, A.S.M.E.
CODE REQUIREMENTS

To fabricate welded and riveted products up to 1 $\frac{1}{4}$ " in thickness, the facilities of DOWNTOWN IRON WORKS include: X-Ray and Magnaflux Equipment, Welding Equipment (manual, heliarc and automatic), a Universal Testing Machine (120,000# capacity) and such other equipment as necessary in the fabrication of A.S.M.E. or A.P.I. — A.S.M.E. Code vessels.

More than 97,000 sq. ft. of space — 79,000 under roof and 18,300 in the yard — available for fabrication work. Our personnel — skilled workmen, engineers, technicians and research men — is constantly striving to improve the quality of our products and the efficiency of our production.

DOWNTOWN has many years experience in fabrication of Carbon Steel, Stainless Steel, Stainless Clad, Nickel Clad... and many of the Non-Ferrous Metals. Send for Bulletin entitled: "Partial Analysis of 1950 A.S.M.E. Code" . . . useful as a handy reference guide. . . and explains our facilities.



X-Ray Inspection at DOWNTOWN

DOWNTOWN IRON WORKS, INC.
DOWNTOWN, PA.
STEEL & ALLOY PLATE FABRICATION
HEAT EXCHANGERS

NEW YORK OFFICE: 30 CHURCH STREET

When inquiring check CP 6269 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Data available on heat transfer

Charts and data, including formulae, applying to manufacturer's heat transfer units are given in technical manual. These manuals are available in a limited quantity only. Heat Transfer Manual is issued by Kold-Hold Manufacturing Co., Dept. CP, Lansing, Mich. When inquiring specify CP 6270 on handy form, pages 2 and 3.

Alloy cylinder liner extends life of vibrator . . .

pneumatic unit is equipped for single or double end mounting

Uses: Such applications as removing match plate patterns from sand molds, providing steady flow of powdered or granular materials from hoppers, feeding small parts for assembly, settling mixes in concrete block and vault machines, vibrating packaging tables, moving granular materials through tubes and chutes, and fatigue-testing assemblies prior to installation.

Features: Special corrosion-resistant bronze alloy cylinder liner is said to assure thorough and permanent piston lubrication, full-power starting, high-speed operation, and maximum service life.

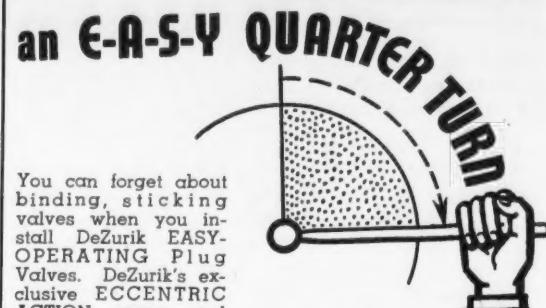
Description: Vibrators operate on standard 80 psi line pressure to deliver 2200 to 6000 impacts per minute, depending upon piston diameter. Five diameters are available, ranging from $\frac{1}{2}$ to $1\frac{1}{4}$ ". Speed of vibration is regulated by varying air line pressure. Air consumption ranges from 6 to $9\frac{1}{2}$ cfm.

Having facilities for single or double end mounting, Series 77 vibrators permit vibration either in line with direction of material flow or at a 90° angle to it. Simple nut and bolt mounting arrangement permits rapid attachment and facilitates changing from one location to another. Easily attached straight or ell air intake connectors are provided to meet requirements.

Source: SPO, Incorporated, Dept. CP, 6522 Grand Division Ave., Cleveland 25, Ohio . . . or for more information check CP 6271 on handy form, pages 2 and 3.

How to minimize waste problems

Six-page article deals with the four categories of industrial waste problems and gives four general methods of combatting them. BOD, pH, oils



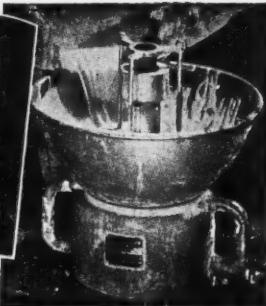
You can forget about binding, sticking valves when you install DeZurik EASY-OPERATING Plug Valves. DeZurik's exclusive ECCENTRIC ACTION opens and closes the line with a smooth quarter-turn, completely free from friction, always instantly responsive. These are the valves with the rugged rubber-faced plug that STOPS LEAKS ON ANY FLOW. There's a DeZurik Model and Size to handle anything that's piped and handle it perfectly!

**DeZURIK
SHOWER CO.
SARTELL,
MINNESOTA**

(Made in England by Millspough, Ltd. — Sheffield)

When inquiring check CP 6272 on handy form, pgs. 2-3

**A MAGNETIC
SEPARATOR
with PROVEN
PERFORMANCE!**



the FRANTZ FERROFILTER

Proven through demonstrated effectiveness in some of the best known plants in the country by separating any form of foreign substance subject to magnetic attraction.

The FerroFilter in any one of three types: gravity, underfeed or pipeline, cleans up the liquid—prevents product rejections or lowering of grade.

Catches iron particles sometimes as fine as one micron.

Available also in dry type with vibrator for granular materials and powders.

For further information, write for Bulletin No. 46.

S. G. FRANTZ CO., INC.

P.O. Box 1138 Trenton 6, New Jersey

When inquiring check CP 6273 on handy form, pgs. 2-3

CHEMICAL PROCESSING



**BEATS
Anything
YOU HAVE
EVER SEEN
In The
Way Of A
Bagging Scale**

The most highly perfected, low priced completely self-contained bagging unit ever produced. This really remarkable new

APEX BAGGING SCALE

For Free Flowing Materials

combines speedy filling and accurate weighing in one simple semi-automatic operation. Handles four to six 100 lb. bags per minute. Extremely easy to operate. Quickly attached to any wood or metal hopper.

GIVES YOU MANY ADVANCED AND EXCLUSIVE FEATURES

including: one-piece over and under indicator; incomparable bag clamp; protective dust evacuating shield; 2 to 1 leverage system; extra large, trouble-free dash pot; simple slide gate control.

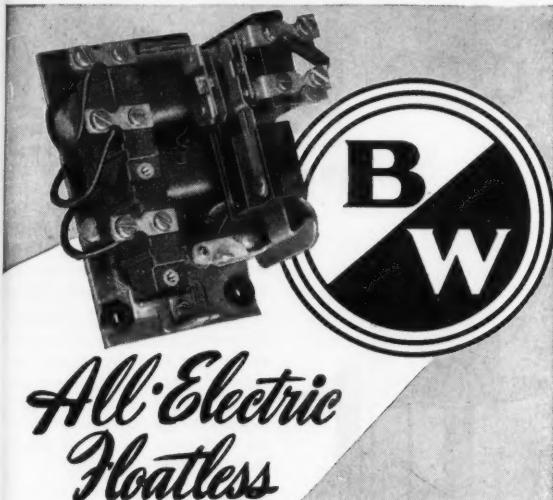
Write for literature. Exclusive distributors:

BURROWS EQUIPMENT COMPANY

1316-M Sherman Ave.

Evanston, Ill.

When inquiring check CP 6274 on handy form, pgs. 2-3



All-Electric Floatless LIQUID LEVEL CONTROLS

Write for latest catalog covering the complete line of B/W Induction Relays, Induction Relay Switches, Relay Enclosures, Contactors and Starters, Multiple Pump Controls, Electrode Holders, Starter and Relay Combinations, Special Controls and Panels.

Controls will never trouble you, when you buy B/W

B/W CONTROLLER CORPORATION
2204 East Maple Road, Birmingham, Michigan

FIRST IN THE FLOATLESS CONTROL FIELD

When inquiring check CP 6275 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

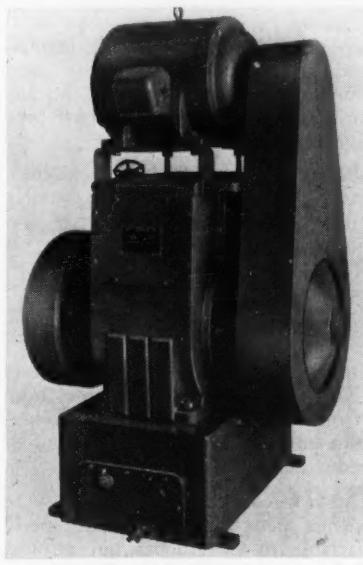
and greases, and sludge, silt, etc., are considered as factors in stream pollution. "Four Ways to Economize on Industrial Wastes" is issued by Gilbert Associates, Inc., Dept. CP, Reading, Pa. When inquiring specify CP 6276 on handy form, pages 2 and 3.

Only four moving parts operate self-contained vacuum pump . . .

water-cooled unit uses 25 hp motor; capacity 500 cfm

Uses: For vacuum processing where requirements up to 500 cfm are indicated.

Features: Operates at a high volumetric efficiency due to complete discharge at each stroke, with no chance for re-expansion. With only four



500 cfm vacuum pump

moving parts, and low relative surface motion of piston to housing, minimum wear and low up-keep can be expected. Slugs of liquid are discharged without injury to pump.

Description: Water-cooled unit which operates at 390 rpm. 25 hp motor is top-mounted. Net weight is 2,400 lb. Height is 76" and floor space occupied is 36 x 38"

Oil reservoir is located in pump base, where lubricating oil settles when pump is shut down and vacuum is broken. There is no danger of flooding the pump cylinder. Oil flows automatically to all parts when pump is started again.

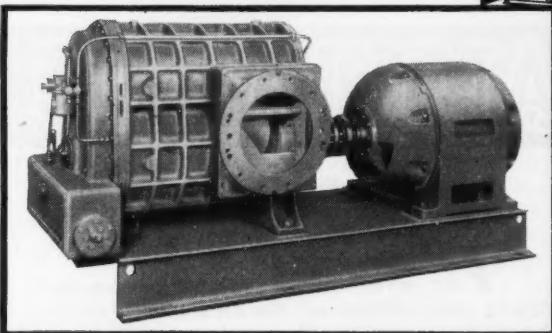
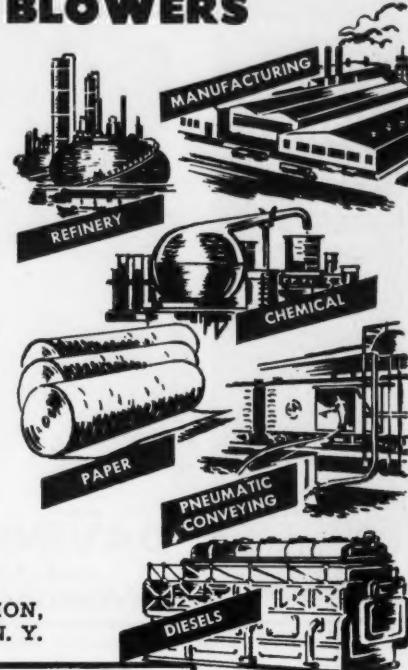
Source: Microvac pump # 812-F is built by F. J. Stokes Machine Co., Dept. CP, Philadelphia 20, Pa. . . . or for more information check CP 6277 on handy form, pages 2 and 3.

Wherever AIR or GAS is used Investigate STANDARDIAIRE

AXIAL FLOW BLOWERS

READ STANDARD'S engineered-for-production program has resulted in the acceptance of Standardaire Blowers for virtually every important industry. Blowers are currently being produced for a wide range of applications in a rapidly expanding market — and in many instances to suit specific requirements and specifications. The amazing acceptance of Standardaire Blowers is indicative of their superior operating characteristics, high efficiency and dependable performance in round-the-clock service. For further details we invite you to consult with our engineers. They will be glad to study your air or gas problems and make recommendations. Write Dept. E34

READ STANDARD CORPORATION,
370 Lexington Ave., New York 17, N. Y.



Standardaire 1218B23
Blower to deliver 2850 c.f.m.
at 1160 r.p.m.



Engineers like the STANDARDIAIRE principle

RECENT BLOWER USERS: Amalgamated Sugar Company • Brillo Manufacturing Co., Inc. • Chicago Pump Co. • Cleaver-Brooks Company • Dow Chemical of Canada, Ltd. • E. I. DuPont de Nemours & Co. • Fairbanks, Morse & Company • Hercules Powder Co., Inc. • Hills Bros. Coffee, Inc. • Husky Oil Co. • Koppers Company, Inc. • Monsanto Chemical • National Advisory Committee for Aeronautics • Ozark-Mahoning Co. • United States Navy • Standard Brands, Inc. • West Jersey Paper Manufacturing Co.

BLOWER-STOKER DIVISION

FORMERLY
The Standard Stoker
Co., Inc.
ONLY THE NAME IS CHANGED

READ STANDARD
CORPORATION

NEW YORK • CHICAGO • ERIE • YORK • LOS ANGELES

When inquiring check CP 6278 on handy form, pgs. 2-3

THE "DAVENPORT" CONTINUOUS PRESS

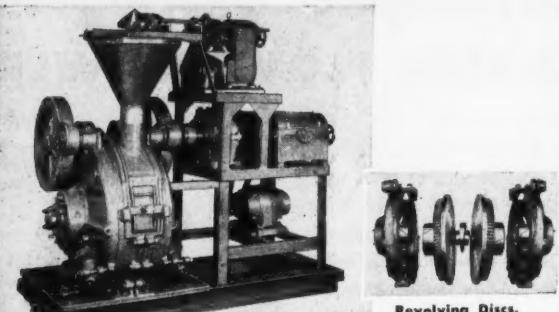
DAVENPORT

De-Watering
Presses and
Screens

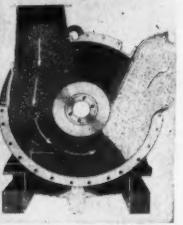
ROTARY

Steam Tube.
Hot Air and
Direct Fire
Dryers.

Water Tube
and Air
Coolers.



Assembled Press.



Cross Section.

DAVENPORT MACHINE
and FOUNDRY COMPANY
DAVENPORT 4 IOWA

When inquiring check CP 6279 on handy form, pgs. 2-3

DURAMETALLIC

Packings

For over thirty years, custom-built types and styles of Durametallic Packings have been serving the various stuffing box requirements of the chemical industry. . . .

Durametallic Sales and Service is nation-wide. Submit your sealing problems to us for free counsel.

DURAMETALLIC CORPORATION
KALAMAZOO,
MICHIGAN



When inquiring check CP 6280 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Shows demineralizer

Two-color folder shows and describes, giving specifications and performance data, an ion-exchange unit. Form 200 is issued by Industrial Filter & Pump Mfg. Co., Dept. CP, 5900 Ogden Ave., Chicago 50, Ill. When inquiring specify CP 6281 on handy form, pages 2 and 3.

Only two pipe lines required on tube drawing press . . .

unit's pump is directly connected to 20 hp motor

Uses: Metal blanks are drawn into long tubes on this 35 ton press which is designed for 50 tons capacity. Special use of this unit is producing tubes for optical use.

Features: Convenient pushbutton control provides both manual and semi-automatic operation and emergency stop or reversal at any point in the cycle. Only two pipe lines are required.

Description: Crosshead, which carries drawing tool, is accurately guided on lubricated, hardened and ground ways bolted to inside of frame. Maker's type "DX-3511" two-way variable speed pump is directly connected to a 20 hp electric motor.

Only two pipe lines are required. Cams on crosshead provide both stroke adjustment and top and bottom point of reversal adjustment of crosshead.

Drawing speed, variable to 114 inches per minute; return speed, variable to 288 inches per minute. Stroke 28", daylight 40", between columns 24", front to back 24", table height 30", overall height 149", weight 12,000 lb.

Source: Vertical 35-ton 2-column press is built by The Oilgear Co., Dept. CP, 1588A West Pierce St., Milwaukee 4, Wis. . . . or for more information check CP 6282 on handy form, pages 2 and 3.

Illustrated catalog shows pillow blocks

Illustrated catalog has engineering data, bearing capacities, lubrication information, dimension drawings, and types and sizes of pillow blocks for shafts from 1-15/16 to 9" diam. Catalog 88 is issued by W. A. Jones Foundry & Machine Co., Dept. CP, 4401 W. Roosevelt Rd., Chicago 24, Ill. When inquiring specify CP 6283 on handy form, pages 2 and 3.

Safe hands cut costs 5 ways

2 of many types,
functionally designed
for working
hands:



Multi-ply coating of NEOX—reinforced neoprene, extremely resistant to cutting, abrasion and chemicals. Fabric lining prevents snags, absorbs sweat, insulates, makes gloves easy on and off. Firm non-slip grip.



Natural rubber treated palm and thumb. Has firm grip, wet or dry; wears like a tire.

We have the case records of hundreds of on-the-job tests, handling sharp, abrasive and slippery materials, with and without the presence of heat, oils, greases, acids, caustics, solvents and degreasers—where proper selection of work gloves has resulted in:

- 1: Fewer lost-time accidents
- 2: Faster, surer work handling
- 3: Less spoilage
- 4: Improved job attitude
- 5: And 40% to 70% savings in usual glove costs.

There's a correct glove for every job. Smart management makes it available.

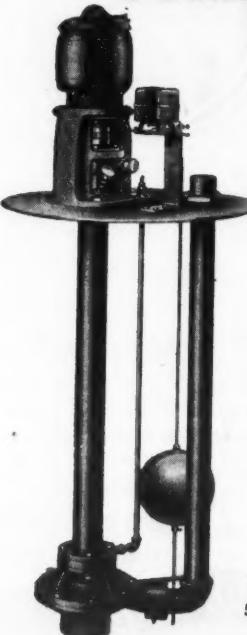
Edmont

Edmont Manufacturing Company
1204 Walnut Street, Coshocton, Ohio

World's largest maker of coated industrial gloves

When inquiring check CP 6284 on handy form, pgs. 2-3

NEW Deming SUMP PUMPS



These new Deming Sump Pumps are designed for trouble-free service, easy maintenance and long life.

Features include heavy-duty construction, close tolerance dowel-ring fits from motor to impeller, positive alignment of all rotating and guide bearing parts, column connections flanged and bolted for easy maintenance.

Pumps can be furnished in cast iron, bronze, Monel and stainless steel. Sizes range from 1 to 10 inch discharge with capacities from 10 to 3000 G.P.M., and heads up to 140 ft.

Complete details, selection tables, and accessories are illustrated and explained in new Bulletin No. 4600-A. Write for a copy.

THE DEMING COMPANY
522 Broadway • Salem, Ohio

When inquiring check CP 6285 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Air blast loosens stubborn dirt, supplements suction action of industrial pneumatic cleaner . . .

'pick-a-back' and tank models connect to any plant air line supplying 80 psi or more

Uses: For wide range of plant and shop industrial floor cleaning, storage and other areas, as well as surfaces of equipment. Especially serviceable in reaching into and cleaning places that are generally inaccessible. Applications cover chemical, plastic, metal working, textile and similar plants.

Features: Vibrating air, flowing through a venturi tube, creates extra strong, agitating suction pressure in the nozzle. Compressed air is pulsed at 2,000 intermittent blasts per minute through an automatic valve.

Cleaning thoroughness is increased by external air-jet



"Pick-a-back" cleaner is safe for dust-laden areas

"dirt-loosener". Through a second valve, this jet directs pulsed air ahead of the cleaning nozzle to blast stubborn dirt loose. Both operations are under finger-tip control.

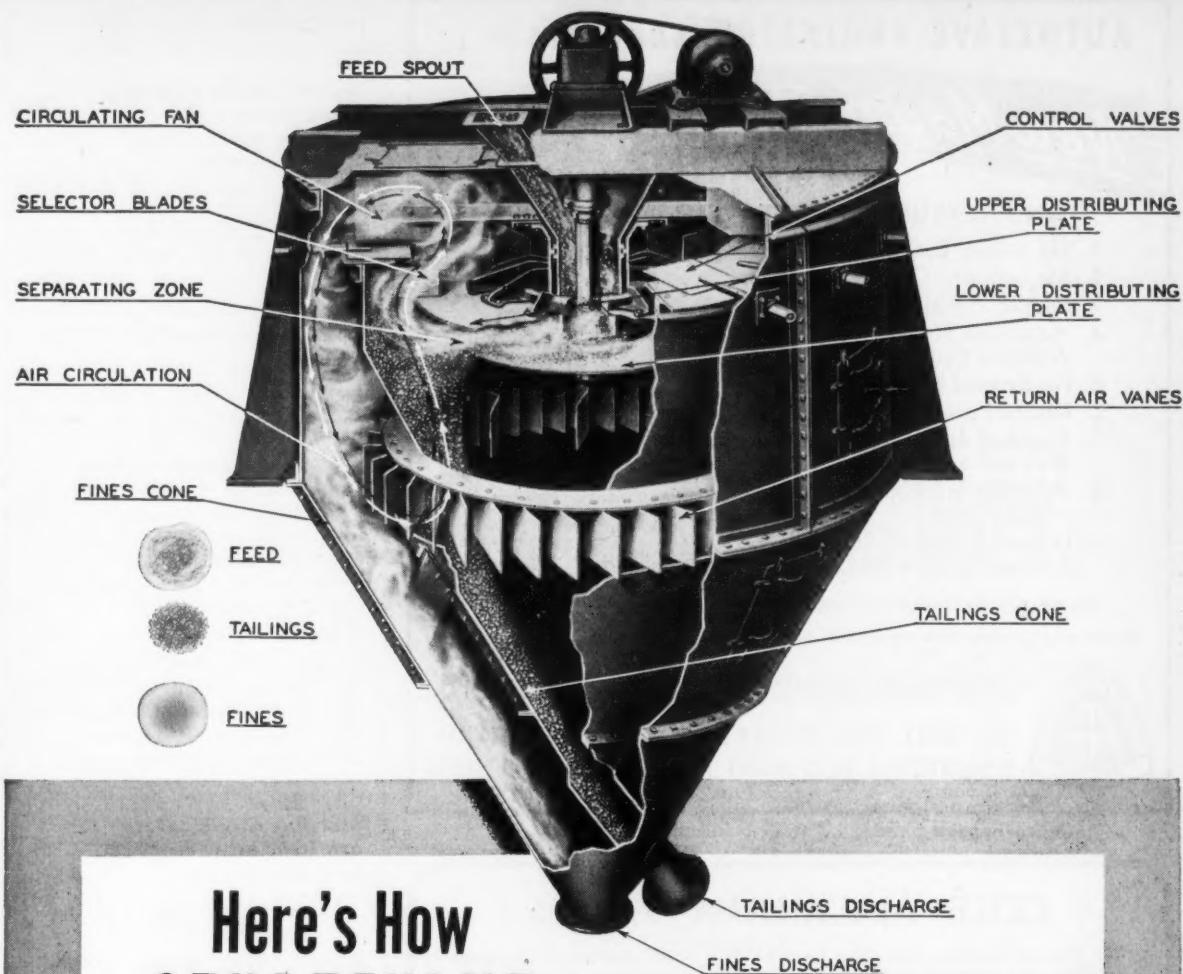
Description: Operates from plant air supply of 80 psi and up. Built in tank and "pick-a-back" models. The latter model, illustrated, includes in its standard equipment four wands of various lengths and nozzles 5, 8 and 10" wide. Operating weight is 7½ lb. Air consumption is from 2.7 to 7.2 cfm.

Tank model is designed for users whose requirements call for a castered tank container.

Source: Vibro-pneumatic industrial cleaners are built by Patterson Products, Vibro-Pneumatic Cleaner Div., Dept. CP, 518 Maccabees Bldg., Detroit 2, Mich. . . or for more information check CP 6286 on handy form, pages 2 and 3.

Operation and performance stressed in valve catalog

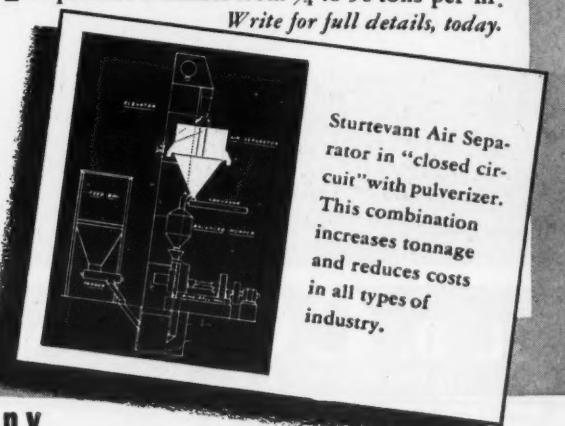
Two-color, 20-page catalog covers motor-driven, solenoid, and handwheel valves. Operational and performance characteristics are treated in detail, with many optional assemblies for specialized application also shown. Valves are available in a large range of special alloys from sizes of $\frac{1}{4}$ to 6 inches. Catalog 1500 B is issued by The Annin Company, Dept. CP, 3500 Union Pacific Ave., Los Angeles 23, Calif. When inquiring specify CP 6287 on handy form, pages 2 and 3.



Here's How STURTEVANT Air Separators Increase Production of Fines... Lower Separation Costs

- Sturtevant Air Separators effect production savings by increasing output by 25 to 300% . . . reducing power consumption by as much as 50%.
- They efficiently carry off all classified materials in any desired fineness from 40 to 325 mesh and finer . . . eliminate the need of screening in certain applications.
- Capacities available from $\frac{1}{4}$ to 50 tons per hr.

Write for full details, today.



Sturtevant Air Separator in "closed circuit" with pulverizer. This combination increases tonnage and reduces costs in all types of industry.

Sturtevant Mill Company

119 Clayton Street, Boston 22, Mass.

Designers and Manufacturers of: CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS • MECHANICAL DENS and EXCAVATORS • ELEVATORS • MIXERS

When inquiring check CP 6288 on handy form, pgs. 2-3

AUTOCLAVE ENGINEERS Announce...

New Magne Dash *

HIGH PRESSURE AUTOCLAVE

1. No Stuffing Box
2. Magnetically Operated Agitator
3. Positive Agitation
4. Adjustable Timer to Vary Agitation Cycle
5. No External Moving Parts
6. Internal Parts Type 316 Stainless
7. Furnished with Thermocouple Well and 4 Connections
8. Available in 100cc—250cc—500cc Sizes
9. Pressure Ratings—5,000 P.S.I. and 15,000 P.S.I.

WRITE FOR DETAILED INFORMATION

*Licensed by Standard Oil Company of Indiana—Patent Pending



AUTOCLAVE ENGINEERS, INC.
860 EAST 19TH STREET • ERIE, PENNSYLVANIA
LABORATORY & PILOT PLANT HIGH PRESSURE EQUIPMENT

When inquiring check CP 6289 on handy form, pgs. 2-3



PROCESSING EQUIPMENT

Fast, accurate weighing is the feature of bagging scale . . .

attaches to any wood, metal hopper to fill paper or burlap bags

Uses: For weighing out bags of practically all free flowing materials.

Features: Semi-automatic operation is fast and accurate. Either paper, burlap, or combination bags can be handled.

Description: Apex bagging scale is equipped with a safety type, all steel bag clamp. Two to one leverage system is equipped with pivots and bearings of fine tool steel. The simple over and under indicator has no small parts or springs and uses an extra large dash pot. Dust is controlled by a shield enclosing the upper part of the scale. Flow control is handled by a sliding gate valve.

Source: Distributed exclusively by Burrows Equipment Company, Dept. CP, 1316-9 Sherman Ave., Evanston, Ill. . . or for more information check CP 6291 on handy form, pages 2 & 3.

Sturdiness and safety are built into foot switch . . .

switch is designed to make or break two circuits

Uses: Used where operator of equipment must have his hands free while controlling power. Makes or breaks two circuits.

Features: Mechanical interlock prevents both circuits from being operative at the same time.

Description: Lecktro-Lok is a sturdy mechanism housed in a stamped metal casing and finished with black crackle finish. Treadle is pivoted in the center so that pressure on either



end causes one circuit to be opened or closed. When the pressure is released, switch returns to the normal position. Weighing 10 oz, the Lecktro-Lok model L-2-S (two SPDT sections) is

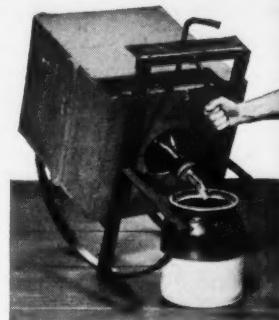
POUR SAFER & FASTER

Eliminate splashing and spilling of acids with the new GS Saffee-Flo Carboy Tilter. Advanced design and rugged steel frame assure dependable service.

Type GS 11 TILTER, with pouring spout . . . \$24.95 complete

SMOOTHER FLOW provided by acid-resistant pouring spout at rates up to 5 gal. per minute.

Type GS — Pouring Spout only . . . \$4.95



BIG, NEW SAFETY CATALOG SENT FREE ON REQUEST



48 pages; hundreds of safety items completely described and illustrated. Price list included.

ALL ORDERS SHIPPED FROM PHILADELPHIA OPEN ACCOUNTS INVITED

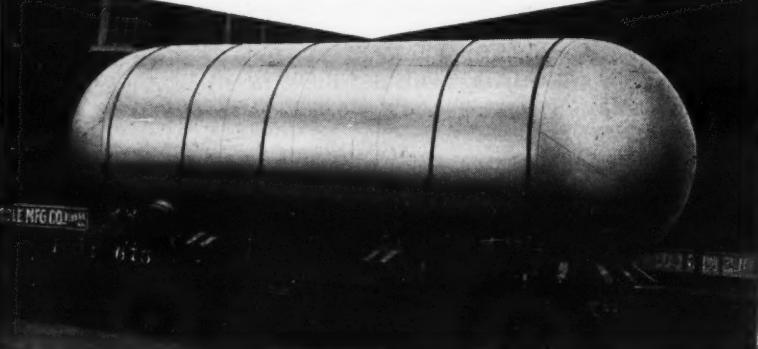


SAFETY EQUIPMENT FOR EVERY HAZARD

When inquiring check CP 6292 on handy form, pgs. 2-3

COLE ALUMINUM TANKS

We have available stock sizes from 9,500 to 22,800 gallons for pressure storage, and tanks of 99.6% pure aluminum for hydrogen peroxide from 5,000 to 11,150 gallons. "Cole" can furnish tanks made of steel, aluminum and stainless steel — built in accordance with ASME Code — to meet all insurance requirements. We invite your inquiries for high pressure storage tanks, elevated tanks, acid or oil storage tanks, bins, boilers, stacks, etc.



R. D. COLE MFG.CO.
NEWNAN, GA. Established 1854



When inquiring check CP 6290 on handy form, pgs. 2-3

IF YOU USE SPRAY NOZZLES HAVE THESE FACTS

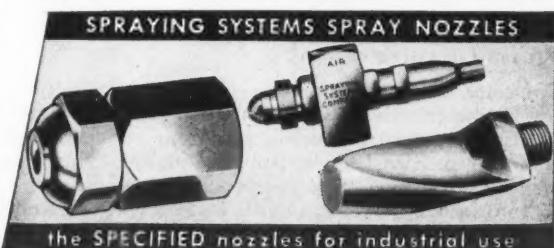


BEFORE YOU!

the internal design and capacity of the spray nozzles used in a spraying operation often determine the cost and quality of that operation. See for yourself why Spraying Systems spray nozzles are the SPECIFIED nozzles of industry today. Write for Catalog 22 . . . the facts are all there.

SPRAYING SYSTEMS CO.
3216 Randolph Street • Bellwood, Illinois

WRITE FOR: CATALOG 22 • GENERAL CATALOG
CATALOG 23 • PNEUMATIC ATOMIZING NOZZLE CATALOG



the SPECIFIED nozzles for industrial use

When inquiring check CP 6293 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

rated 20 amp at 110 v, or 10 amp at 230 v AC.

Source: Simonds Machine Co., Inc., Dept. CP, Southbridge, Mass., is the maker . . . or for more information check CP 6296 on handy form, pages 2 and 3.

Describes systems for roof cooling

Four-page bulletin gives descriptions and specifications of typical roof cooling systems. Reported to reduce interior temperature 10° to 20° F, these systems are economical and easy to maintain. Bulletin 20 is issued by Water Cooling Corp., Dept. CP, 71 Nassau St., New York 38, N. Y. When inquiring specify CP 6297 on handy form, pages 2 and 3.

Air stream bores into ore bed for better smelting . . .

tuyere imparts a spin to air blast to improve penetration

Uses: This patented tuyere design is used on blast furnaces, cupolas and similar equipment.

Features: Skewing vanes projecting into the tuyere give the air blast a spinning, boring motion.

Description: Double Auger Tuyeres used in cupolas for gray iron have been from 30 to 60" ID and suitable for both front and back slagging. Better resultant air distribution causes combustion to take place lower in the center of the cupola. Since heat is concentrated just above the tuyere, no slag bridge can form. Other savings: use of less coke, lower bed height since no channeling takes place, and a much lowered silicon and manganese loss through oxidation.

Source: Development of Sprow Tuyere Company, Dept. CP, P.O. Box 109, Jackson, Ohio . . . or for more information check CP 6298 on handy form, pages 2 and 3.

How to make chains work efficiently

Practical tips on installation, operation, and maintenance of chain drives and conveyors are given in bulletin. Text is short and illustrations are mostly of the right-wrong type. Bulletin 51-7 is issued by Dept. PR, Chain Belt Company of Milwaukee, Dept. CP, 1600 West Bruce St., Milwaukee 4, Wis. When inquiring specify CP 6299 on handy form, pages 2 and 3.



You are SURE of instant, unfailing safeguards when you install EVERLASTING VALVES with Pendulum Stop on your fire protection system. The valve action is immediate and positive . . . the flow is full and unimpeded . . . there's no danger of sticking, binding or wedging. Made in all sizes from 1 in. to 8 in. and may be arranged for control from any location. Write for Bulletin E-52C describing these valves in detail.

EVERLASTING VALVE CO., 49 Fisk St., Jersey City 5, N. J.

Trade-Mark "EVERLASTING"—Reg. U. S. Pat. Off.

Everlasting Valves

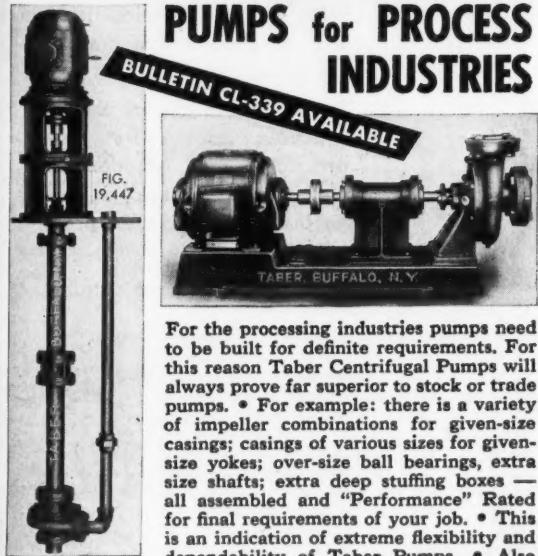
FOR EVERLASTING PROTECTION

When inquiring check CP 6294 on handy form, pgs. 2-3

TABER for Higher PRACTICAL Performance

PUMPS for PROCESS INDUSTRIES

BULLETIN CL-339 AVAILABLE



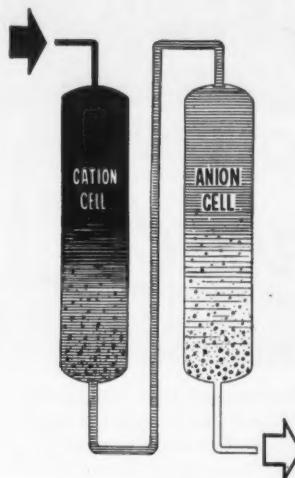
For the processing industries pumps need to be built for definite requirements. For this reason Taber Centrifugal Pumps will always prove far superior to stock or trade pumps. • For example: there is a variety of impeller combinations for given-size casings; casings of various sizes for given-size yokes; over-size ball bearings, extra size shafts; extra deep stuffing boxes—all assembled and "Performance" Rated for final requirements of your job. • This is an indication of extreme flexibility and dependability of Taber Pumps. • Also pump built of any obtainable metal or alloy found suitable by customer. • Please use business stationery when writing for Bulletin CL-339.

TABER PUMP CO. (Est. 1859) 320 Elm St., Buffalo 3, N.Y.

TABER PUMPS

When inquiring check CP 6295 on handy form, pgs. 2-3

AUGUST, 1951



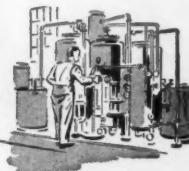
DO YOU KNOW WHAT WE CAN DO FOR YOU IN ION- EXCHANGE?

for instance,
do you know that Dorr . . .



CAN PLACE AT YOUR DISPOSAL

any portion of a complete service for handling ion-exchange problems . . . from problem analysis to initial plant operation?



CAN SUPPLY EQUIPMENT

for the treatment of water, and chemical or sugar bearing solutions of all kinds—for extraction and concentration of some of the valuable metals from dilute solutions—in any capacity you require?



WILL WORK WITH YOU

on any phase of your ion-exchange program—whether it involves established principles or a new and confidential process?

If you are currently exploring the possibilities of ion-exchange for new processes or those already established we believe you will find our service helpful. And our ion-exchange facilities are backed by solid chemical engineering knowledge.

Bulletin #4081 hits the high-spots of Dorrco D-I* Systems. Write to Ion-Exchange Sales, The Dorr Co., Barry Place, Stamford, Conn.

*D-I is a trademark of The Dorr Company.



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THE DORR COMPANY • ENGINEERS • STAMFORD, CONN.
Associated Companies and Representatives in the principal cities of the world

When inquiring check CP 6300 on handy form, pgs. 2-3

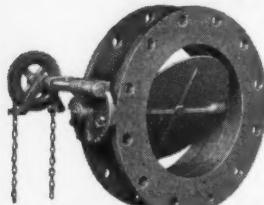
Page 147

Easy Positive Flow Control and Quick Shut-Off

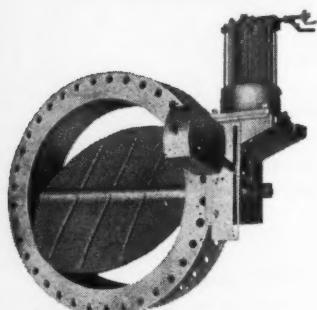
W. S. ROCKWELL Values

for Controlling

- Air supply to boilers, furnaces, reactors, dryers, kilns.
- Air or gases, clean or contaminated, corrosive or abrasive; flue gases and fly ash.
- Effluent from equipment or tanks.
- Dry or wet chemicals, pulp, materials from processing equipment, tanks, bins, hoppers, pneumatic conveyors.
- Vacuum operations; sewage; solvent recovery; powdered fuel.



Flanged butterfly valve with chain wheel control; may also be hand wheel or lever control.



Large butterfly valve with air or hydraulic cylinder.



30" butterfly valve for 60 p.s.i. line pressure; equipped with Limitorque motor operator and auxiliary hand wheel.

Write for Catalog

High pressure, "Kwikleen" slide valve for fluids that clog ordinary valves. Easy to clean without removing from the line by simply removing bottom clean-out plate and blowing or washing out the valve. All manual controls and also with air cylinders. Heavy duty "Kwikleen" Valves are made for 60 p.s.i. operating pressure.



W. S. ROCKWELL COMPANY

220 Elliot Street

Fairfield, Conn.

When inquiring check CP 6301 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Cover closes on storage bin automatically the instant fire breaks out . . .

heavy gauge galvanized iron receptacles made in three sizes; meet fire regulations

Uses: Designed for shipping and receiving rooms and other plant areas where various combustibles are used.

Features: Fitted with fusible link so that cover is allowed to close automatically in case of fire.

Description: Sturdily manufactured of heavy gauge galvanized iron with reinforced angle iron corners. Made in three sizes with respective widths, lengths and heights: 20 x 35 x 33"; 21 x 48 x 37"; 24 x 58 x 37". Bins meet all fire regulations of insurance companies, state and municipal authorities.

Source: Safety storage bins are a product of Industrial Products Company, Dept. CP, 2834 North Fourth St., Philadelphia 33, Pa. . . or for more information check CP 6302 on handy form, pages 2 and 3.

Design of collet chuck features tight grip . . .

manufactured in Sweden, these chucks are becoming popular here

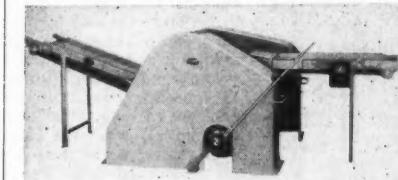
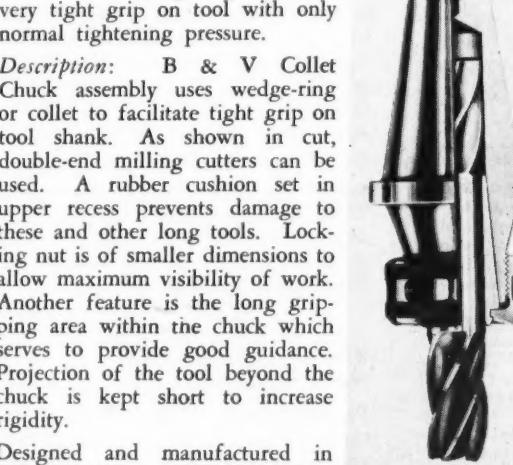
Uses: As chucks in typical machining operations.

Features: Design permits a very tight grip on tool with only normal tightening pressure.

Description: B & V Collet Chuck assembly uses wedge-ring or collet to facilitate tight grip on tool shank. As shown in cut, double-end milling cutters can be used. A rubber cushion set in upper recess prevents damage to these and other long tools. Locking nut is of smaller dimensions to allow maximum visibility of work. Another feature is the long gripping area within the chuck which serves to provide good guidance. Projection of the tool beyond the chuck is kept short to increase rigidity.

Designed and manufactured in Sweden, these are tested before shipment, and individual records of test results are kept. They are reported to be rapidly gaining popularity in the US. Available in sizes from $1/8$ to $1\frac{1}{2}$ ".

Source: Available from Eric S. Johnson Company, Dept. CP, 230 E. Ohio St., Chicago 11, Ill. . . or for more information check CP 6303 on handy form, pages 2 and 3.



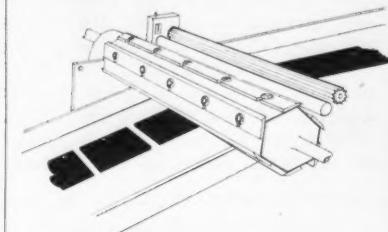
**TAYLOR-STILES
and Company**
CUTTING MACHINES & KNIVES

20 Bridge Street
Riegelsville, N. J.

When inquiring check CP 6304 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PRECISION CUTTING OF STOCK FOR MOLDING MADE PRACTICAL



TAYLOR-STILES PRECISION CUTTERS

—will cut extruded strips of rubber or plastic stock into uniform lengths containing exact quantities of stock for molding.

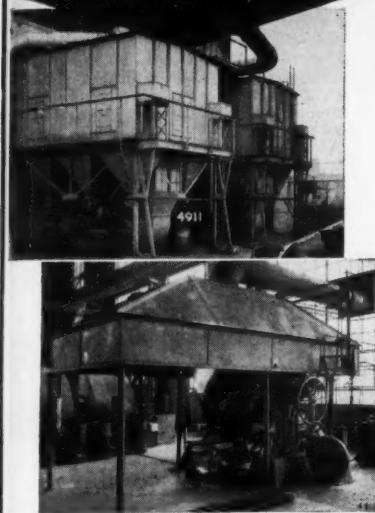
With a 12-inch wide feed, four or more strips can be cut simultaneously.

These cutters are in use by concerns known for their practical and economical methods of manufacture and for the quality of their products.

Write for illustrated catalog.

SLY

PIONEERS AND
LEADERS IN
DUST CONTROL



WE CAN SAVE YOU MONEY BY COLLECTING YOUR DUST

Are you one of those who is still just *enduring* dust? If you are in dust, why not let a trained and experienced Sly engineer suggest a solution?

In your particular industry we have numerous operating installations. All of them are saving money for their owners—in cleaner plants, cleaner products, better personnel relations. Some of them are even making money by recovering valuable products.

With thousands of installations throughout the past 50 years, we have a wealth of experience in all industries. It is an exceptional background of value to anyone with a dust problem.

Yet—Sly costs *no more* (sometimes less.) May we send Bulletin 98 and discuss your dust problem with you?



THE W. W. SLY MANUFACTURING CO.

4754 Train Avenue • Cleveland 2, Ohio
New York • Chicago • St. Louis • Philadelphia
Minneapolis • Birmingham • Cincinnati • Lansing
Los Angeles • Rochester • Toronto

When inquiring check CP 6305
on handy form, pgs. 2-3

AUGUST, 1951

Convention & Exhibit Schedule

Sept. 3-7. American Chemical Society, Diamond Jubilee Meeting, 120th National Meeting, New York, N. Y.

Sept. 10-14. Instrument Society of America, Sixth National Conference and Exhibit, Coliseum, Houston, Tex.

Sept. 16-19. American Institute of Chemical Engineers, Regional Meeting, Sheraton Hotel, Rochester, N. Y.

Sept. 18-19. National Mineral Feeds Association, Inc., 1951 Annual Convention, Bismarck Hotel, Chicago, Illinois.

Oct. 1-4 Industrial Packaging and Materials Handling Exposition, 6th Annual Meeting, Public Auditorium, Cleveland, Ohio.

Oct. 8-10. American Oil Chemists' Society, Fall Meeting, Edgewater Beach Hotel, Chicago, Ill.

Oct. 8-12. National Safety Council, 39th National Congress and Exposition, Hotel Stevens, Chicago, Ill.

Oct. 23. Association of Consulting Chemists and Chemical Engineers, Annual Meeting, Shelburne Hotel, New York, N. Y.

Oct. 29-31. National Paint, Varnish and Lacquer Association, Chalfonte-Haddon Hall, Atlantic City, N. J.

Nov. 1-3. Federation of Paint and Varnish Production Clubs, Chalfonte-Haddon Hall, Atlantic City, N. J.

Nov. 5-8. American Petroleum Institute, Annual Meeting, Chicago, Ill.

Nov. 5-8. Refrigeration Equipment Manufacturers Association, 7th All-Industry Refrigeration and Air Conditioning Exposition, Navy Pier, Chicago, Ill.

Nov. 26-Dec. 1. 23rd Exposition of Chemical Industries, Grand Central Palace, New York, N. Y.

Dec. 2-4. Chemical Specialties Manufacturers Association, Annual Meeting, Mayflower Hotel, Washington, D. C.

Dec. 2-5. American Institute of Chemical Engineers, Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.

1952

Jan. 14-17. Plant Maintenance Show, Convention Hall, Philadelphia, Pa.

Jan. 16-18. The Society of Plastics Engineers, Inc., 8th Annual National Technical Conference, Edgewater Beach Hotel, Chicago, Ill.

March 11-14. The Society of the Plastics Industry, Inc., Fifth National Plastics Exposition, Convention Hall, Philadelphia, Pa.

March 16-19. American Institute of Chemical Engineers, Regional Meeting, Biltmore Hotel, Atlanta, Ga.

April 7-9. The American Society of Lubrication Engineers, Seventh Annual Meeting and Lubrication Show, Hotel Statler, Cleveland, Ohio.

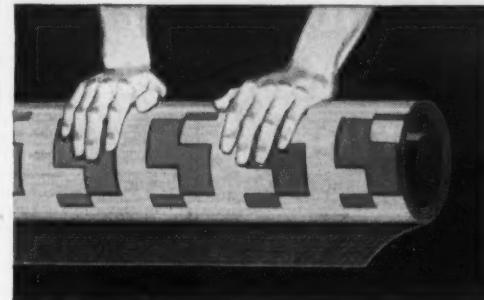
May 6-9. Scientific Apparatus Makers Association, Annual Meeting, Edgewater Beach Hotel, Chicago, Ill.

May 11-14. American Institute of Chemical Engineers, Regional Meeting, French Lick Springs Hotel, French Lick, Ind.

Sept. 4-6. American Institute of Chemical Engineers, Regional Meeting, Palmer House, Chicago, Ill.

Dec. 7-10. American Institute of Chemical Engineers, Annual Meeting, Cleveland Hotel (headquarters) and Carter Hotel, Cleveland, Ohio.

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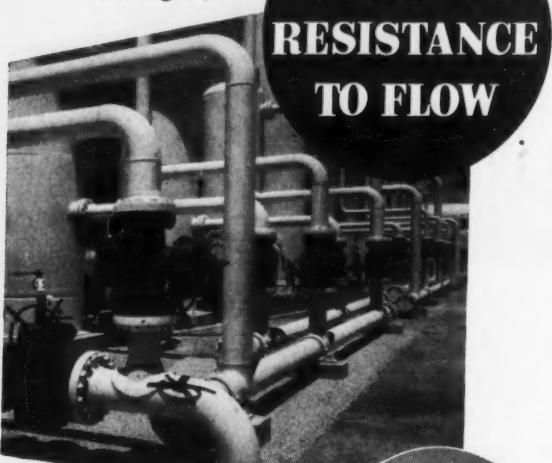
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and MATERIALS

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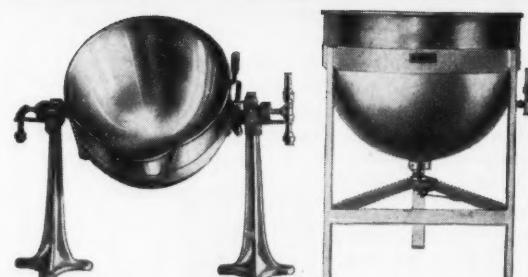
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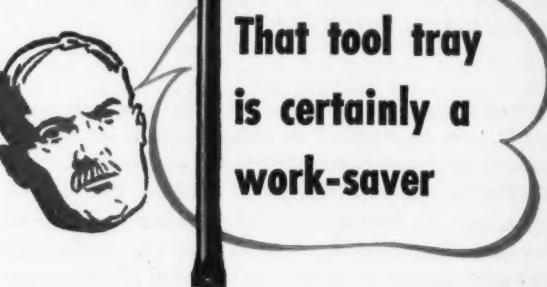
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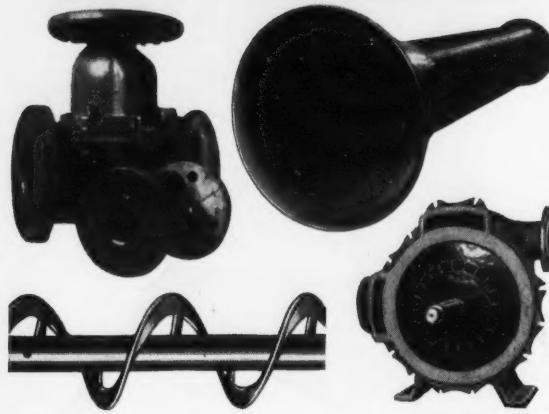
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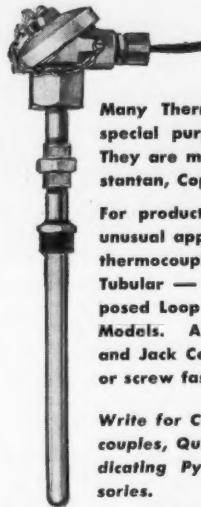
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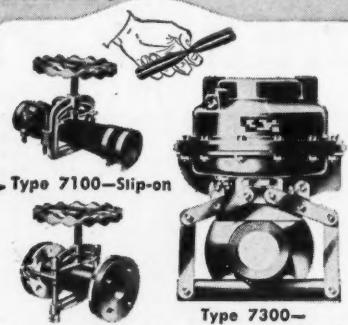
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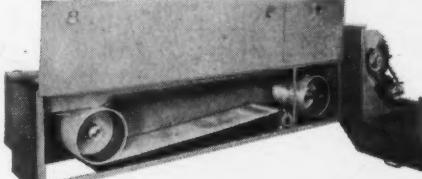
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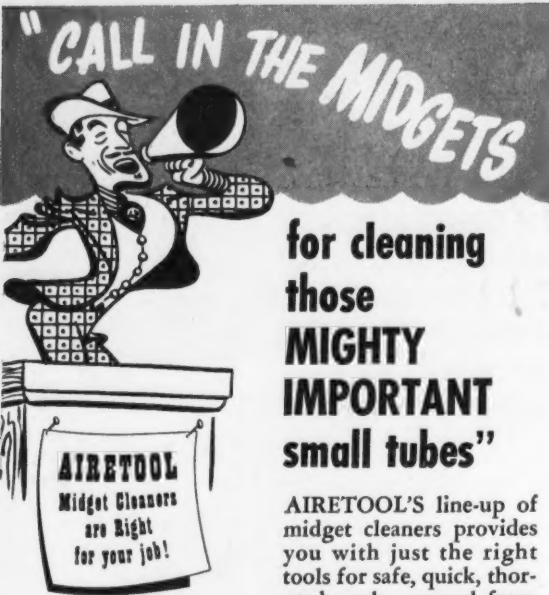
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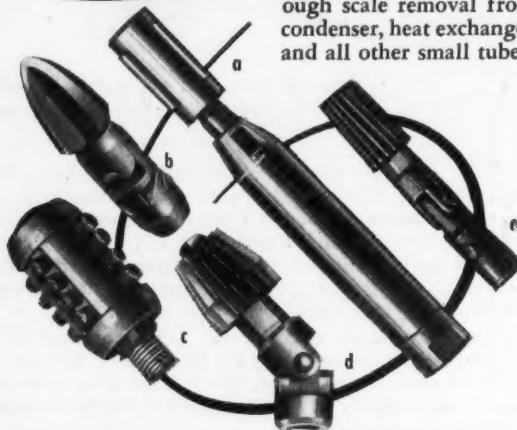
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for cleaning
those
mighty
important
small tubes"

AIRETOOL's line-up of midget cleaners provides you with just the right tools for safe, quick, thorough scale removal from condenser, heat exchanger and all other small tubes.



(a) Expanding blade type head with #29 motor (b) Drill head and Universal Joint (c) Brush type head (d) Single Unit head with cone cutter (e) Single Unit head and Universal Joint

These cleaning heads can be used with either a flexible drive or universal joint for removing scale or other deposits from straight or bent tubes. Tube sizes range from $\frac{5}{8}$ " to 2" I.D. Powerful midget motors are air driven.

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there's an Airetool tube cleaner and tube expander for every type of tubular construction

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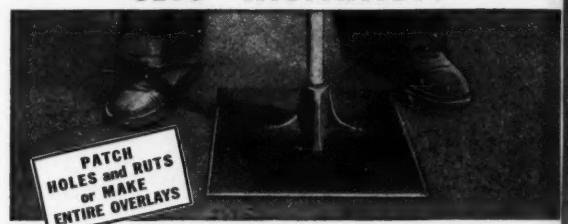
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The new building of the Lincoln Electric Company in Euclid, Ohio, has an aluminum curtain wall that "breathes". It consists of hundreds of 15-inch wide aluminum panels, custom rolled to form three and one-half inch deep box sections. These panels are mounted above brick and limestone sill wall and capped with aluminum coping. Each panel is secured to the building's welded steel inner wall by specially designed aluminum fasteners. The box-type wall actually enables the outer aluminum wall to "breathe" and reduce moisture condensation to a minimum. (The Alcoa News — Aluminum Company of America, Pittsburgh 19, Pa.)

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They are made from Geon Paste Resin (B. Goodrich Chemical Co., Rose Bldg., Cleveland, Ohio) by Ad-Stick Co., Pittsburgh 6, Pa.

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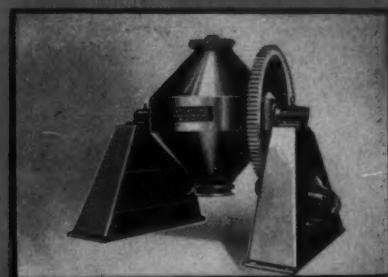
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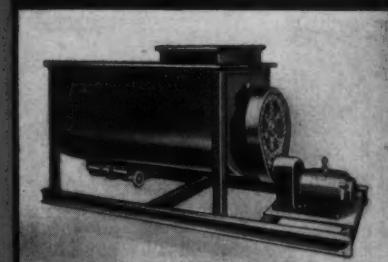
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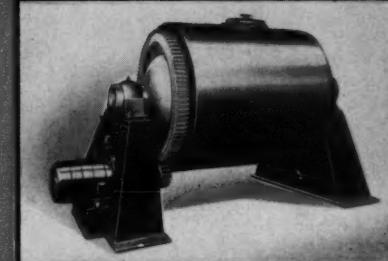
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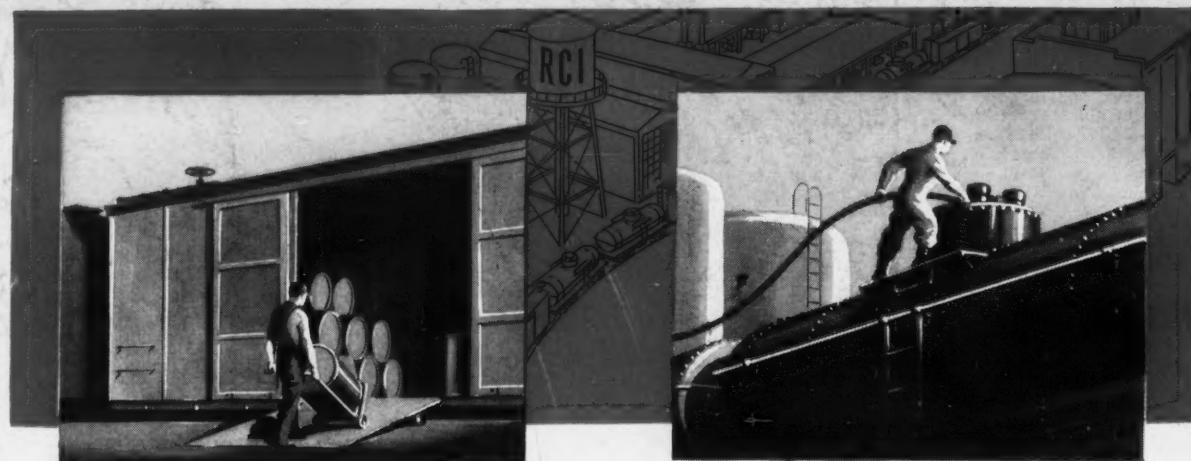
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